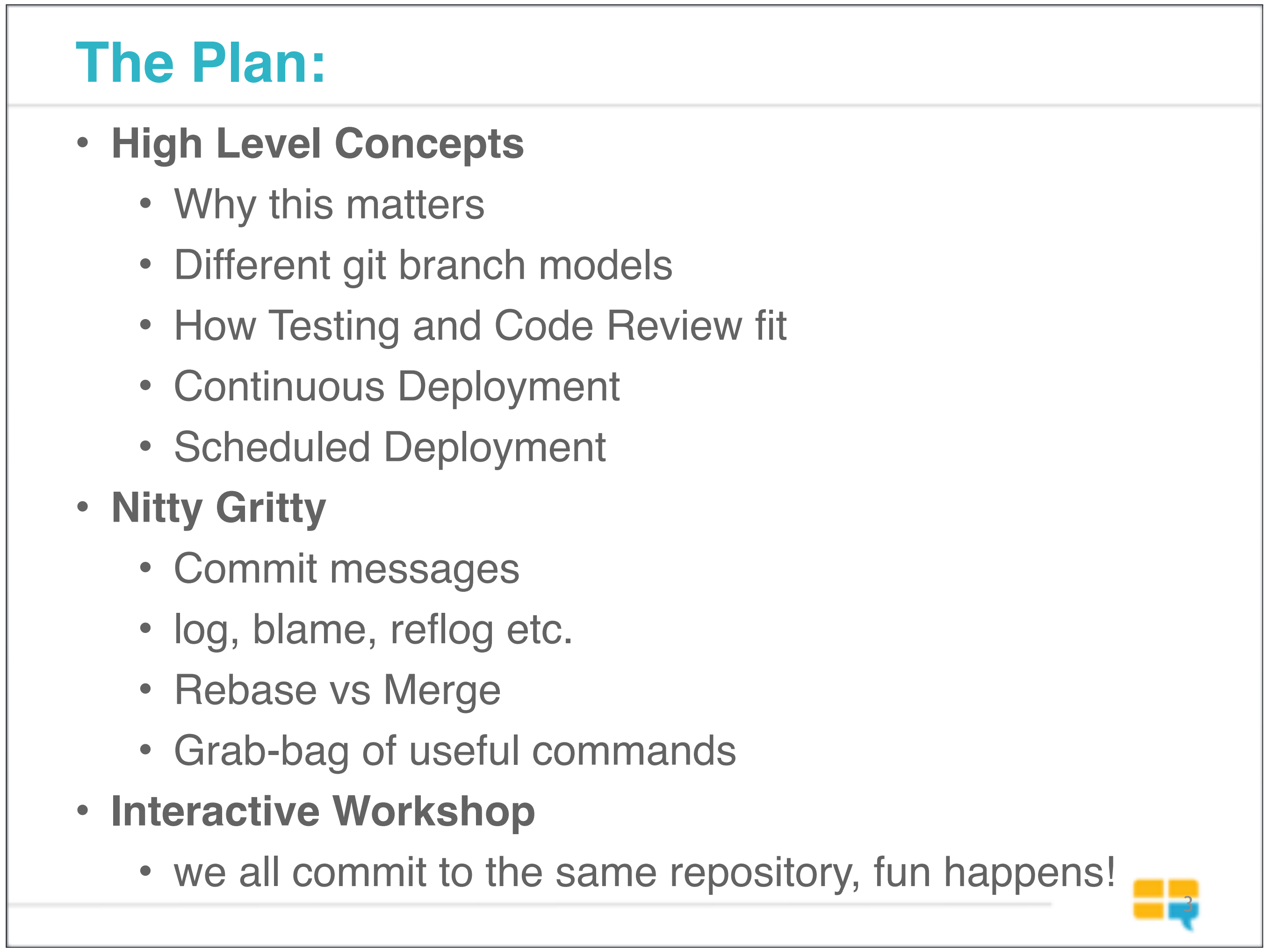
Workflows, Teams, and Integrations

Who We Are!

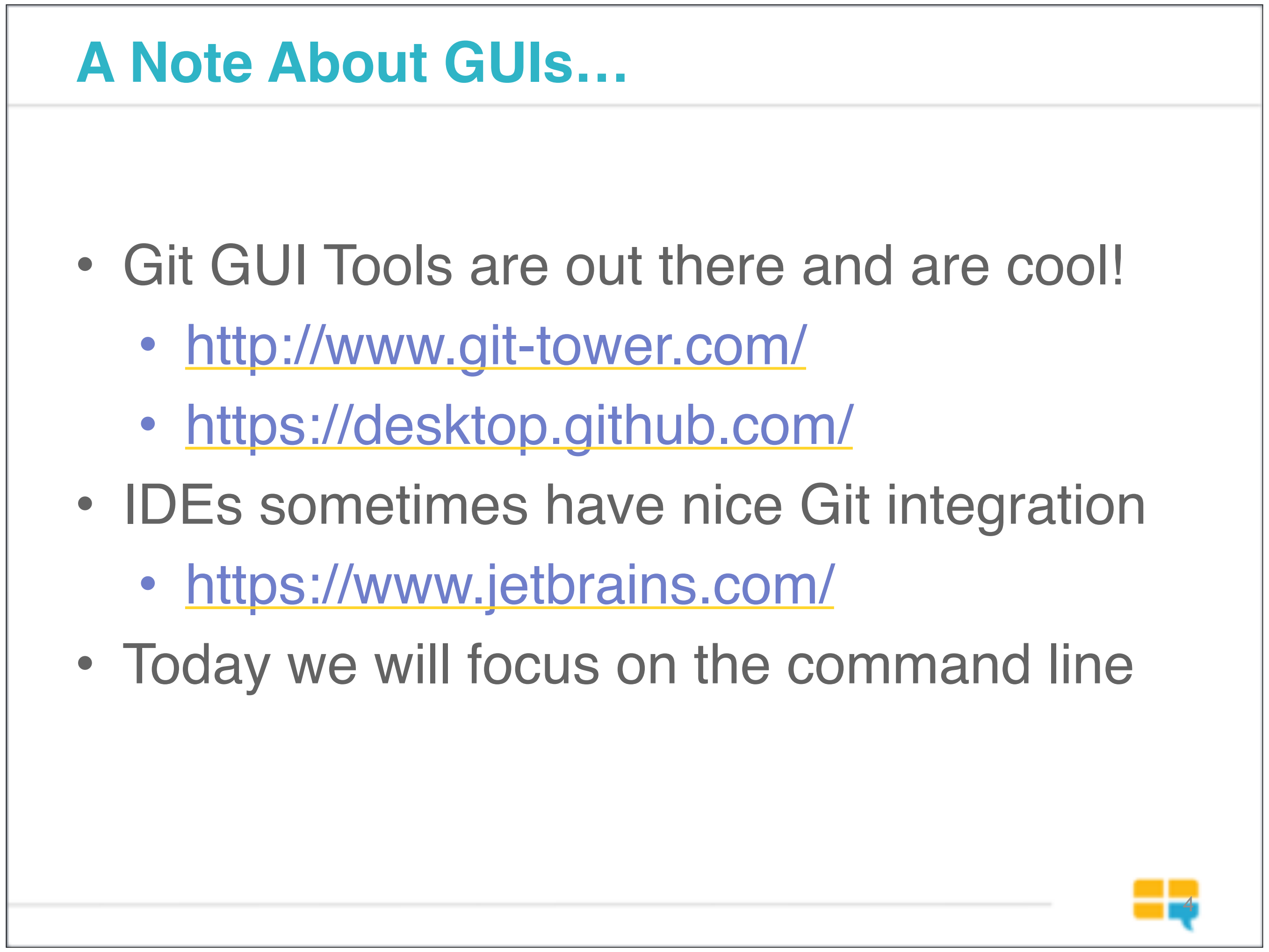
- Rob, Nathan, Aurora, Richard
- Members of the Dev Team at Pretio Interactive
- Support multiple code bases in multiple languages with multiple deploys and builds
- Suck at mind reading, and thus rely on teamwork and communication



The Plan:

- **High Level Concepts**
  - Why this matters
  - Different git branch models
  - How Testing and Code Review fit
  - Continuous Deployment
  - Scheduled Deployment
- **Nitty Gritty**
  - Commit messages
  - log, blame, reflog etc.
  - Rebase vs Merge
  - Grab-bag of useful commands
- **Interactive Workshop**
  - we all commit to the same repository, fun happens!

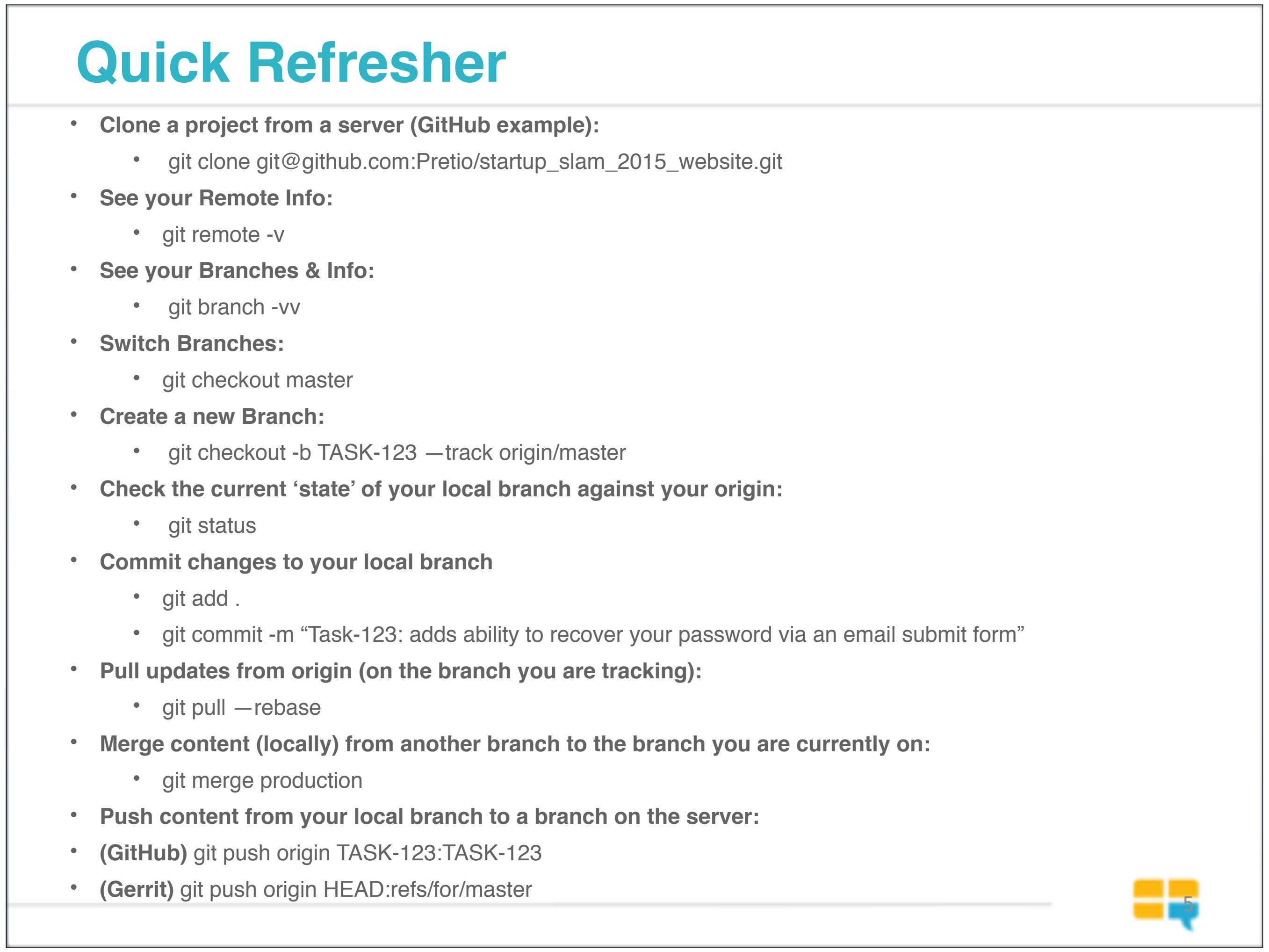
- slides in repo!



A Note About GUIs…

- Git GUI Tools are out there and are cool!
  - http://www.git-tower.com/
  - https://desktop.github.com/
- IDEs sometimes have nice Git integration
  - https://www.jetbrains.com/
- Today we will focus on the command line

- GUI tools good for designers, artists, folks who work with assets and don’t care about code
- Still need a command-line Git Master, it might as well be you



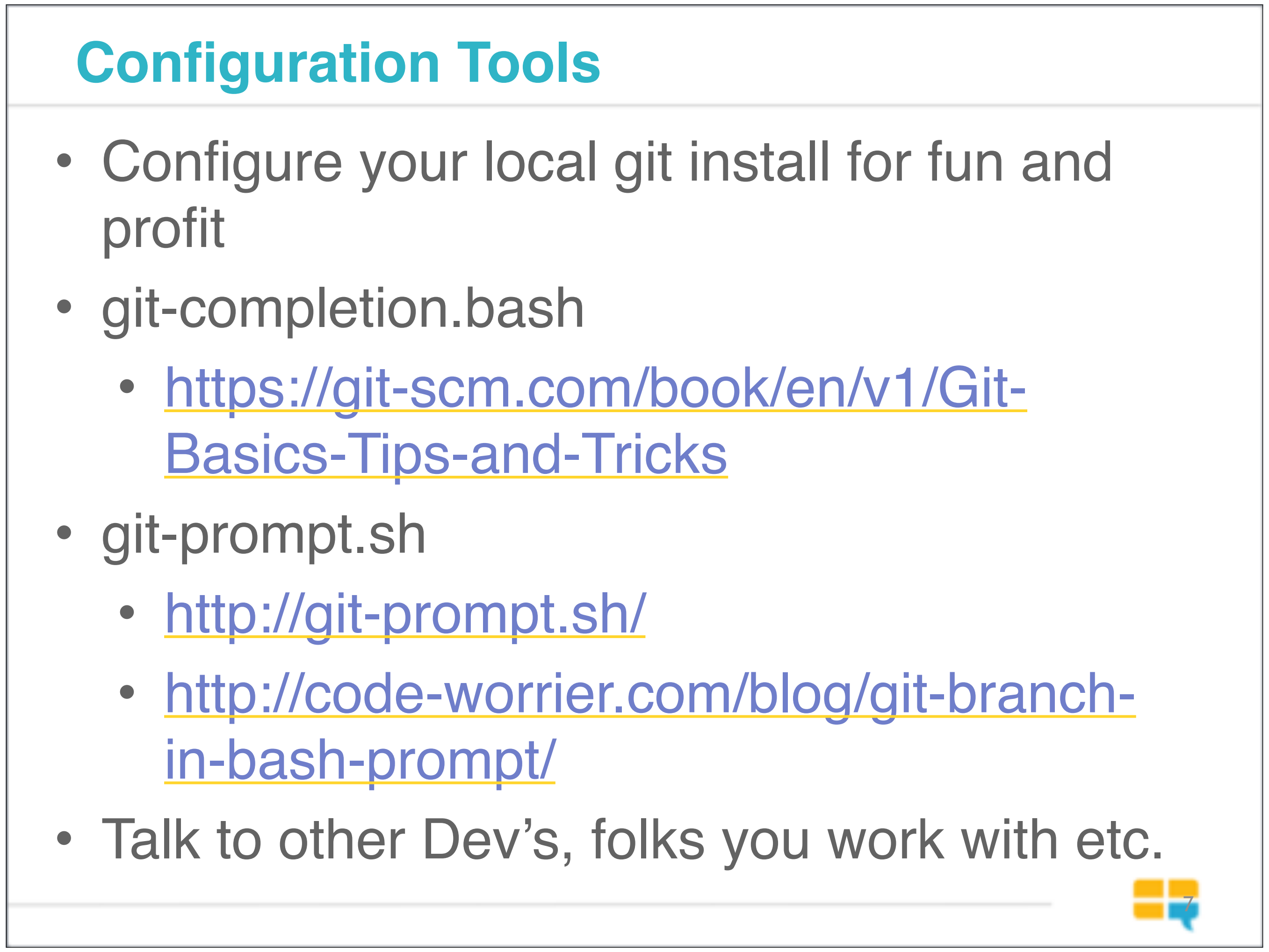
Quick Refresher

- **Clone a project from a server (GitHub example):**
  - git clone git@github.com:Pretio/startup_slam_2015_website.git
- **See your Remote Info:**
  - git remote -v
- **See your Branches & Info:**
  - git branch -vv
- **Switch Branches:**
  - git checkout master
- **Create a new Branch:**
  - git checkout -b TASK-123 —track origin/master
- **Check the current 'state' of your local branch against your origin:**
  - git status
- **Commit changes to your local branch**
  - git add .
  - git commit -m "Task-123: adds ability to recover your password via an email submit form"
- **Pull updates from origin (on the branch you are tracking):**
  - git pull —rebase
- **Merge content (locally) from another branch to the branch you are currently on:**
  - git merge production
- **Push content from your local branch to a branch on the server:**
- **(GitHub)** git push origin TASK-123:TASK-123
- **(Gerrit)** git push origin HEAD:refs/for/master

- Don't forget to mention at the beginning of this that GitHub != Git!

Whyfor?

- Keeps history in a maintainable way
- Communicates changes to the rest of the team
- Smallest possible Dev Team is 3

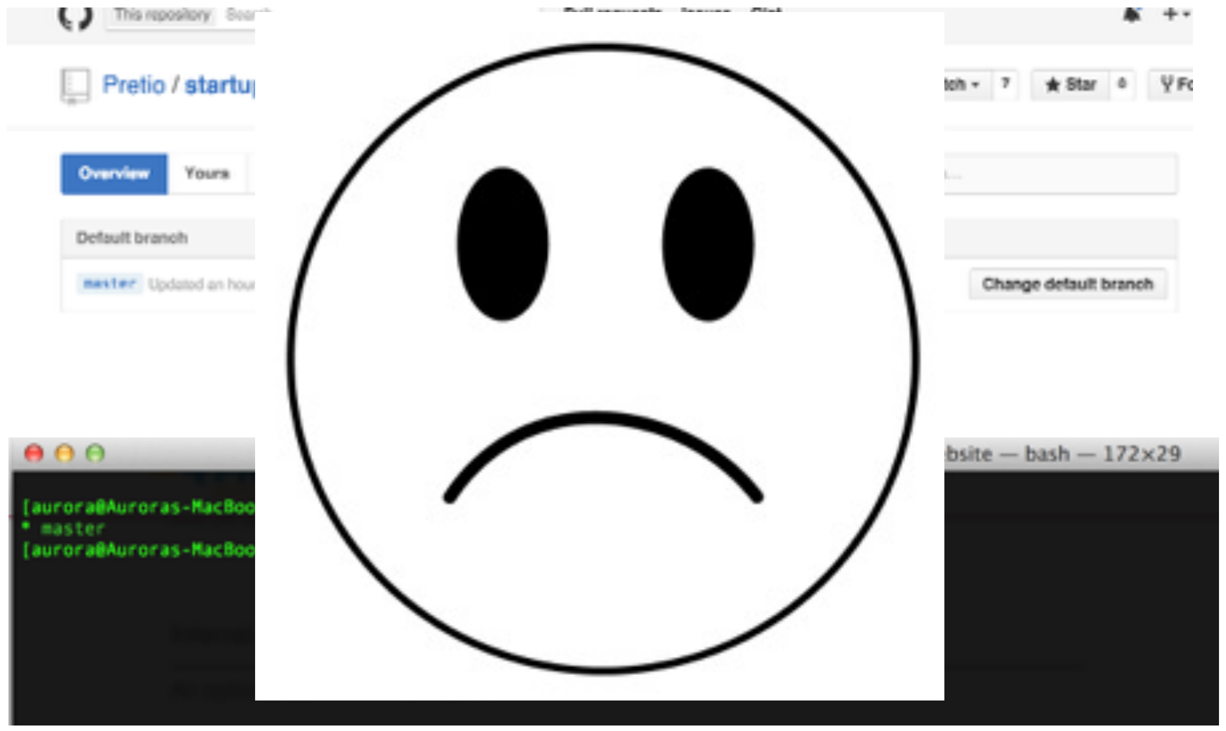


Configuration Tools

- Configure your local git install for fun and profit
- git-completion.bash
  - https://git-scm.com/book/en/v1/Git-Basics-Tips-and-Tricks
- git-prompt.sh
  - http://git-prompt.sh/
  - http://code-worrier.com/blog/git-branch-in-bash-prompt/
- Talk to other Dev's, folks you work with etc.

- git-completion.bash (tab auto-complete for commands, branch names etc)
- git-prompt.sh (shows you which branch you are on in your prompt)

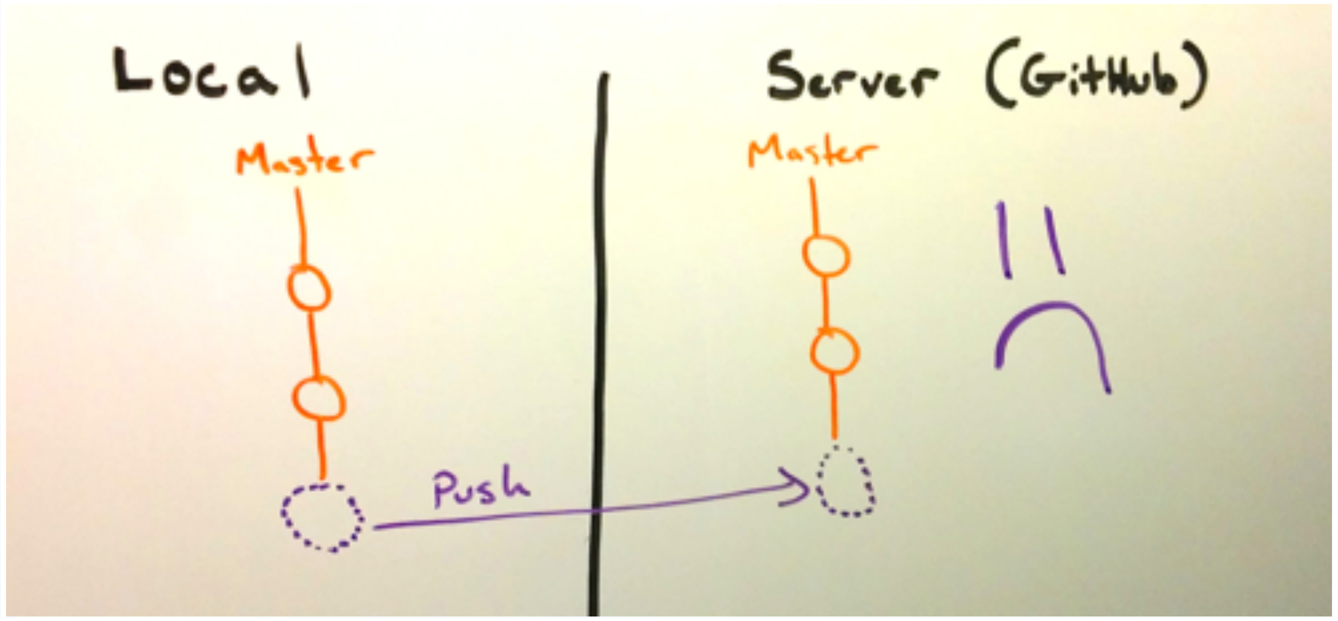
Multi-Branch Development



```
[aurora@Auroras-MacBoo
* master
[aurora@Auroras-MacBoo
```

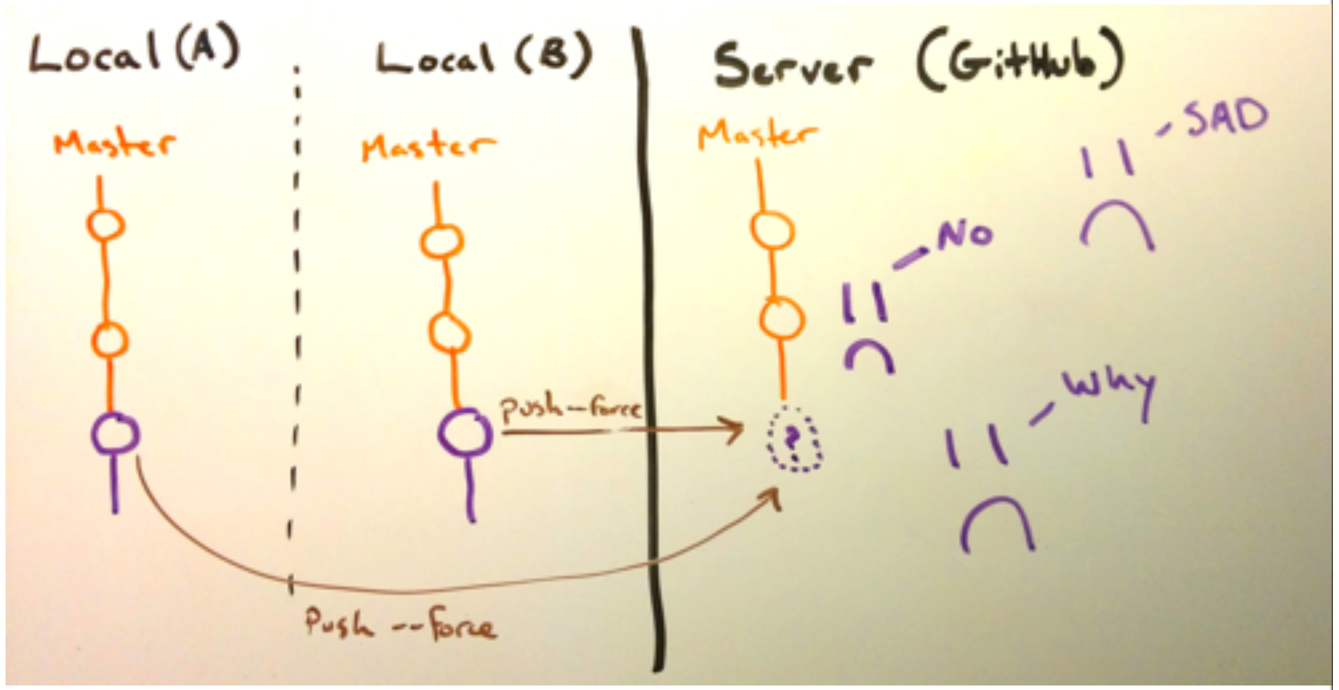
- if you are working off of a single branch called 'master' then stop that now
- branches are disposable!
- use feature branches on your local

Single-Branch Example

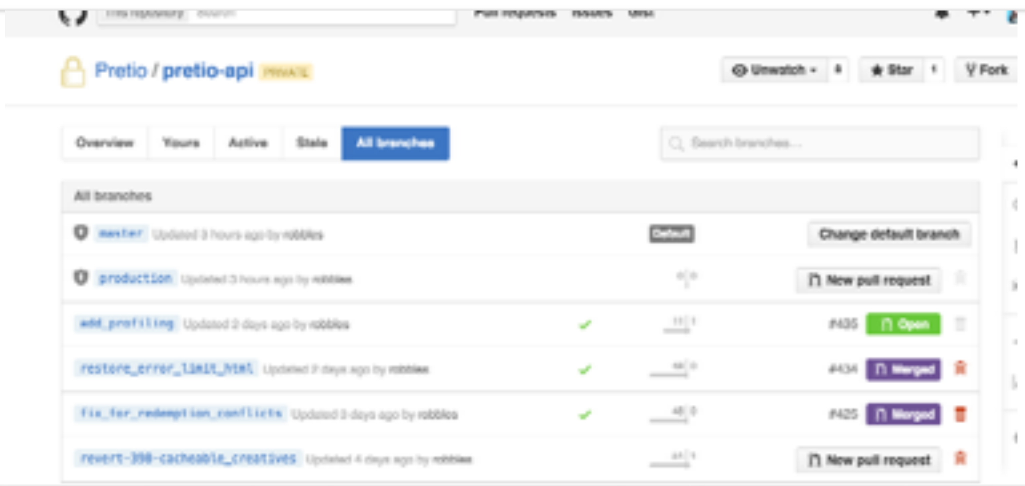


- This is the conceptual model of the previous slide, get used to this drawing notation

Single-Branch Example with Two People



Multi-Branch Development

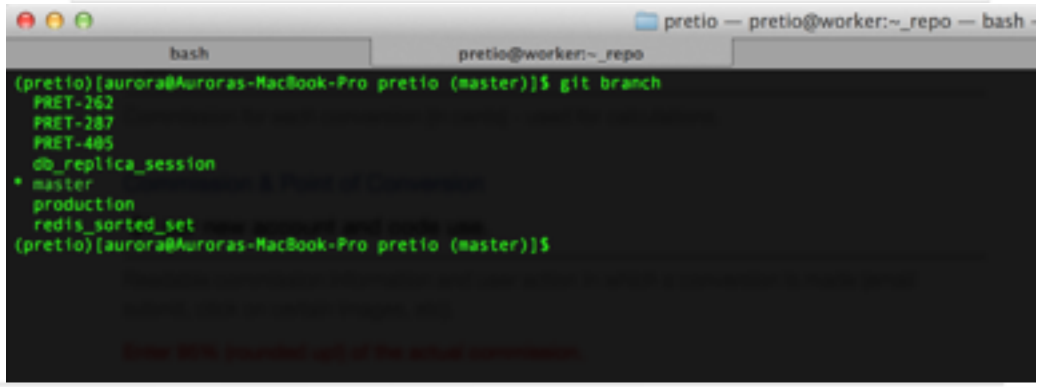


Pretio / pretio-api PRIVATE

Overview | Yours | Active | Stale | All branches

All branches

master Updated 3 hours ago by robbles		Default		Change default branch
production Updated 3 hours ago by robbles				New pull request
add_profiling Updated 2 days ago by robbles	✓		#435	Open
restore_error_limit_html Updated 2 days ago by robbles	✓		#434	Merged
fix_for_redemption_conflicts Updated 3 days ago by robbles	✓		#425	Merged
revert-398-cacheable_creatives Updated 4 days ago by robbles				New pull request

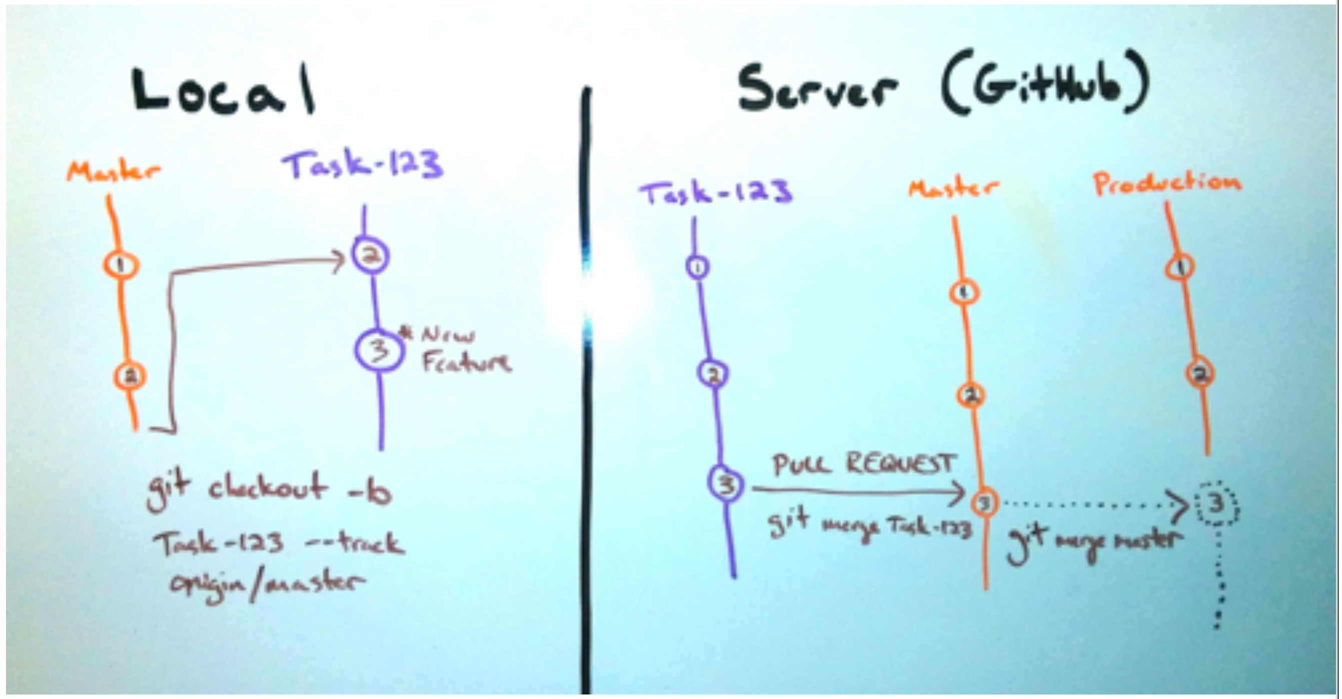


pretio — pretio@worker:~_repo — bash

```
(pretio)[aurora@Auroras-MacBook-Pro pretio (master)]$ git branch
  PRET-262
  PRET-287
  PRET-405
  db_replica_session
* master
  production
  redis_sorted_set
(pretio)[aurora@Auroras-MacBook-Pro pretio (master)]$
```

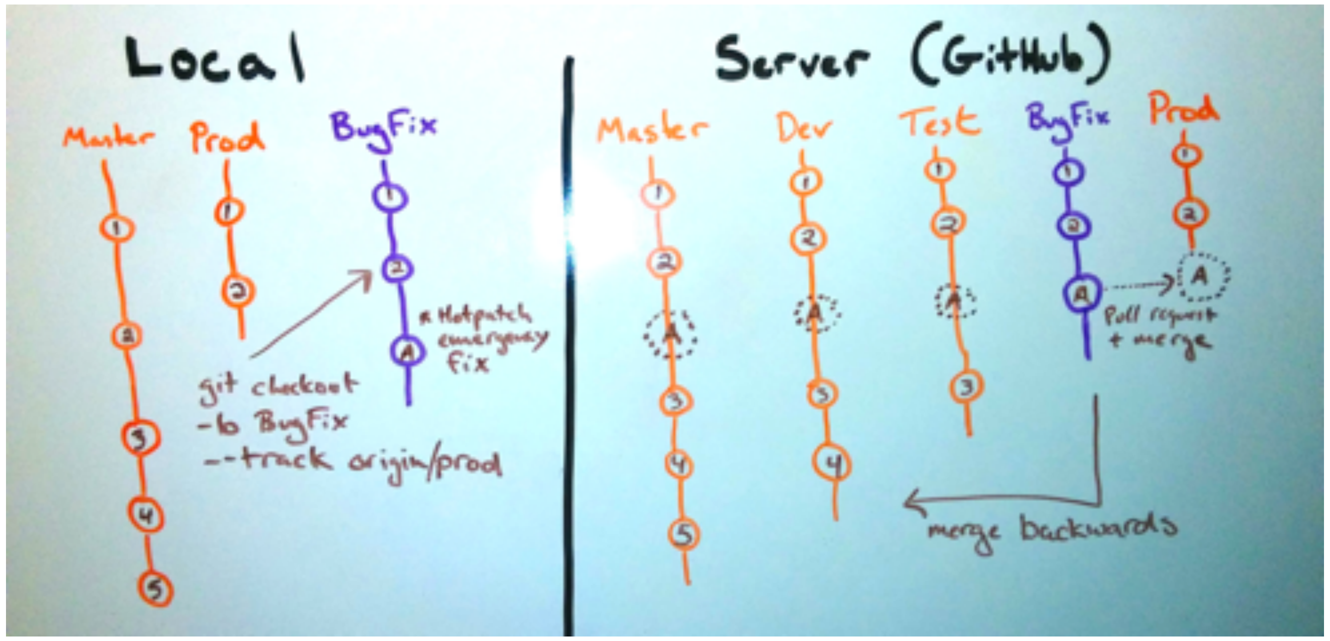
- note locked ‘master’ and ‘production’ branches (show new github feature)
- rest are feature branches actively being worked on, will be thrown away when done

Multi-Branch Example: Continuous Deploy

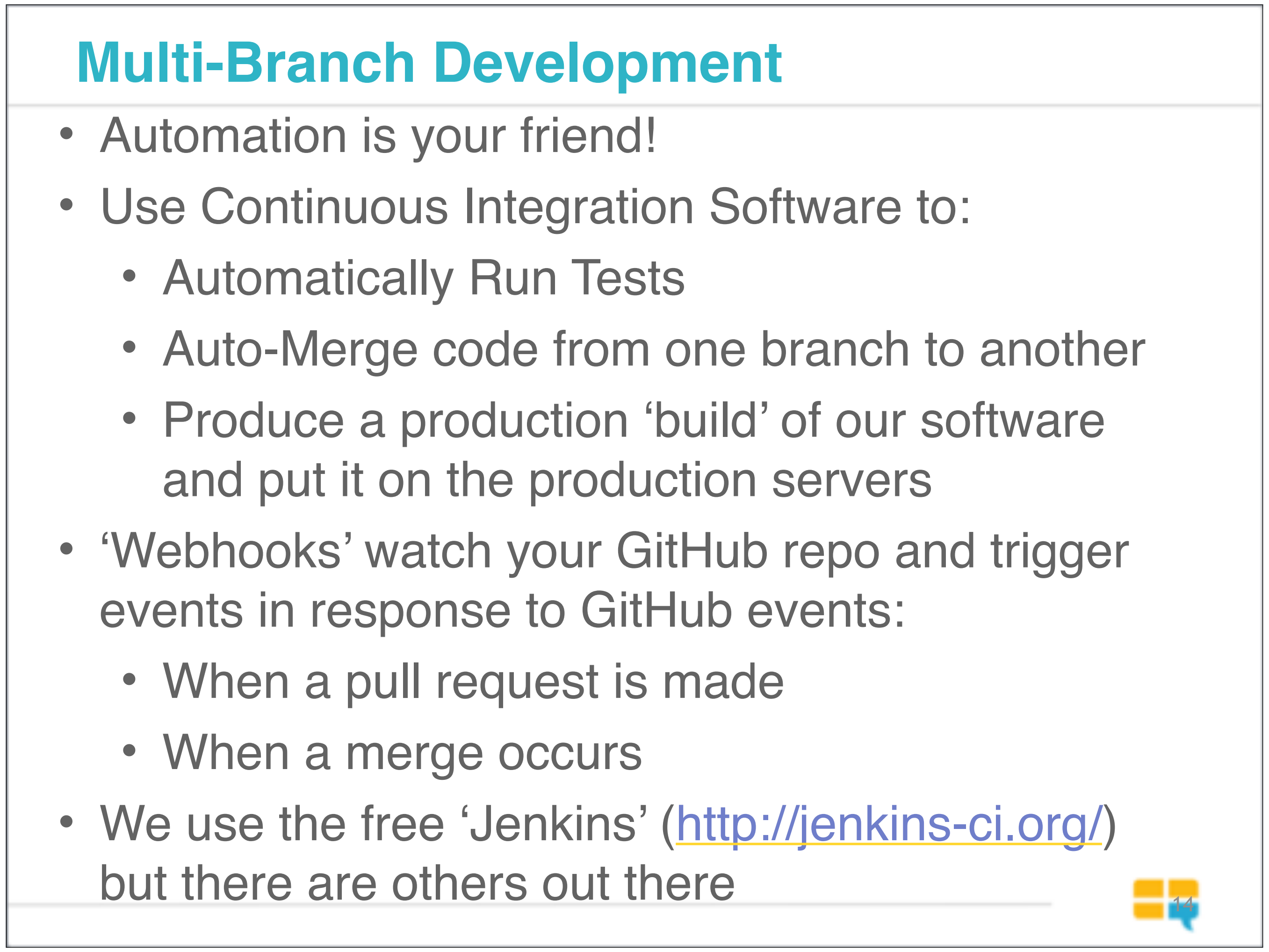


- Example of a Continuous Deploy model - light, code on Prod auto-rolls out
- orange are your 'protected' branches
- purple the feature (disposable) branch

Multi-Branch Example: Scheduled Deploy



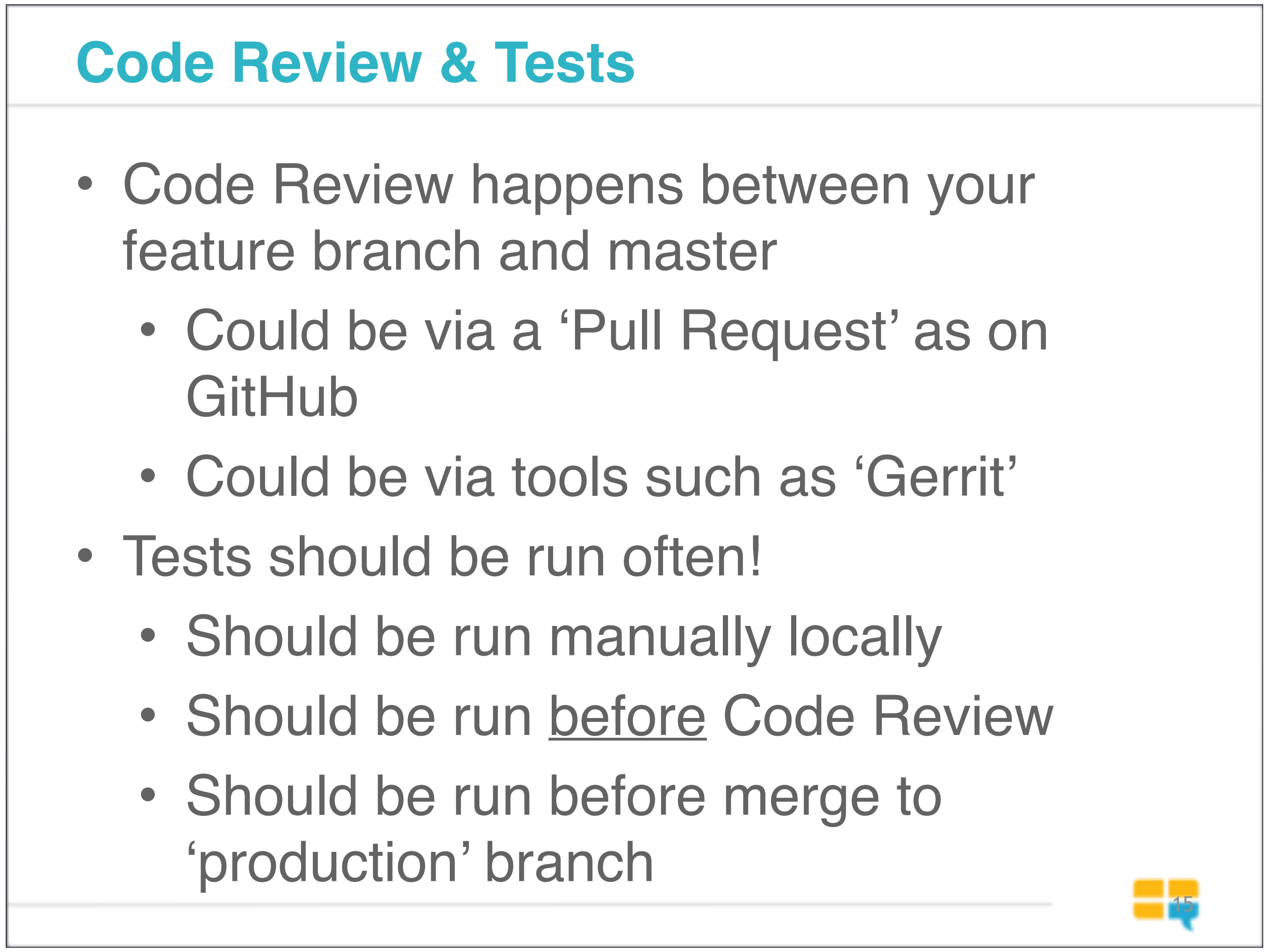
- Scheduled builds, slower control to merge forward
- orange ‘protected’ branches, purple bug fix tracking production
- Dev/Test branches used to make interim builds, i.e. to an internal test server
- Note this merge is a hint for the rebase vs merge slide



Multi-Branch Development

- Automation is your friend!
- Use Continuous Integration Software to:
  - Automatically Run Tests
  - Auto-Merge code from one branch to another
  - Produce a production 'build' of our software and put it on the production servers
- 'Webhooks' watch your GitHub repo and trigger events in response to GitHub events:
  - When a pull request is made
  - When a merge occurs
- We use the free 'Jenkins' (http://jenkins-ci.org/) but there are others out there

- alternatives include 'Bambo' and 'TeamCity'

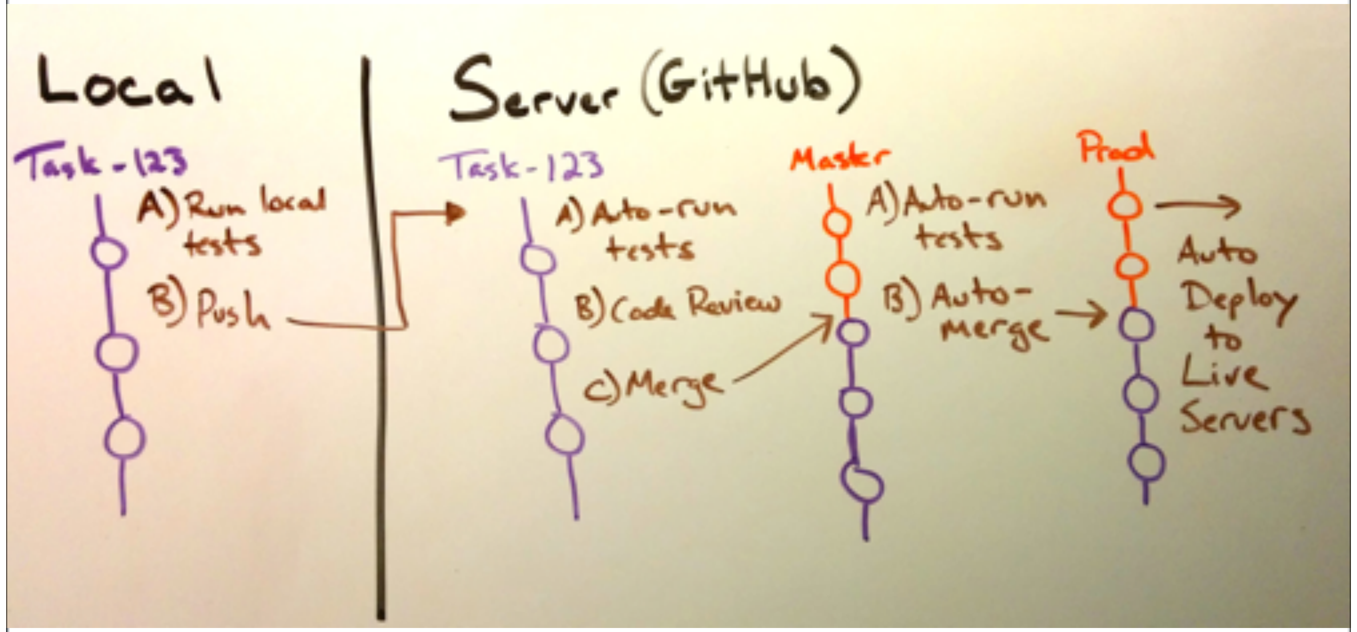


Code Review & Tests

- Code Review happens between your feature branch and master
  - Could be via a 'Pull Request' as on GitHub
  - Could be via tools such as 'Gerrit'
- Tests should be run often!
  - Should be run manually locally
  - Should be run <u>before</u> Code Review
  - Should be run before merge to 'production' branch

- Review a) helps prevent errors b) increases team knowledge of code, c) teaches new members code conventions
- Tests are critical, even for one liner hot fix changes on prod

Code Review & Tests in Flow



- explain why we have production vs master: a controlled queue to ensure that we don't accidentally trigger a deploy of bad code

And unless you have some questions on that previous bit…

NOW ON TO THE NITTY GRITTY DETAILS

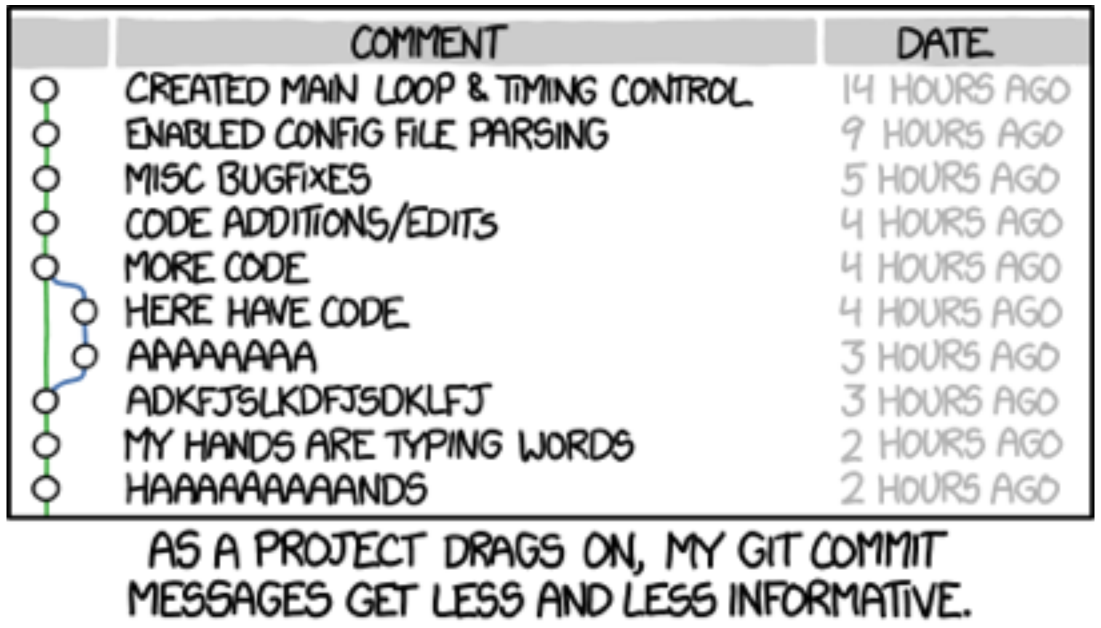
Play Along at Home!

Feel free to checkout the SendWithUs Startup Slam project:

```
> git clone git@github.com:Pretio/startupslam.git
```

Crack open a Terminal Window, and play along locally trying out the commands!

Good Commit Messages



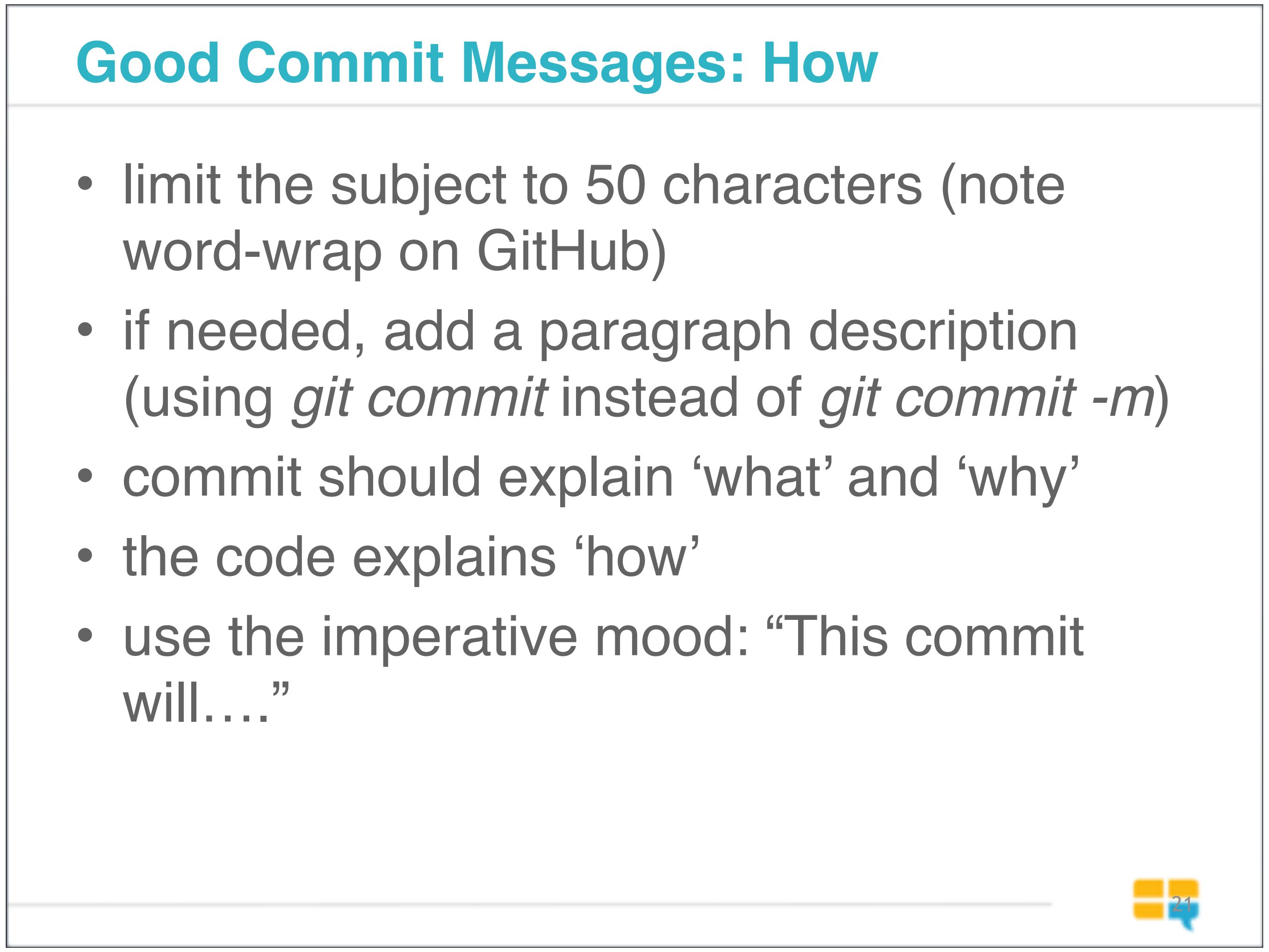
	COMMENT	DATE
○	CREATED MAIN LOOP & TIMING CONTROL	14 HOURS AGO
○	ENABLED CONFIG FILE PARSING	9 HOURS AGO
○	MISC BUGFIXES	5 HOURS AGO
○	CODE ADDITIONS/EDITS	4 HOURS AGO
○	MORE CODE	4 HOURS AGO
○	HERE HAVE CODE	4 HOURS AGO
○	AAAAAAAA	3 HOURS AGO
○	ADKFJSLKDFJSDKLFJ	3 HOURS AGO
○	MY HANDS ARE TYPING WORDS	2 HOURS AGO
○	HAAAAAAAANDS	2 HOURS AGO

AS A PROJECT DRAGS ON, MY GIT COMMIT MESSAGES GET LESS AND LESS INFORMATIVE.

xkcd.com/1296

Good Commit Messages: Why

- commit messages are **passive** forms of communication with all temporal versions of you and the members of your team
- best case scenario when you write a bad commit message is that it is ignored
- in an emergency situation (say a rollback) no one wants to read the code associated with a commit



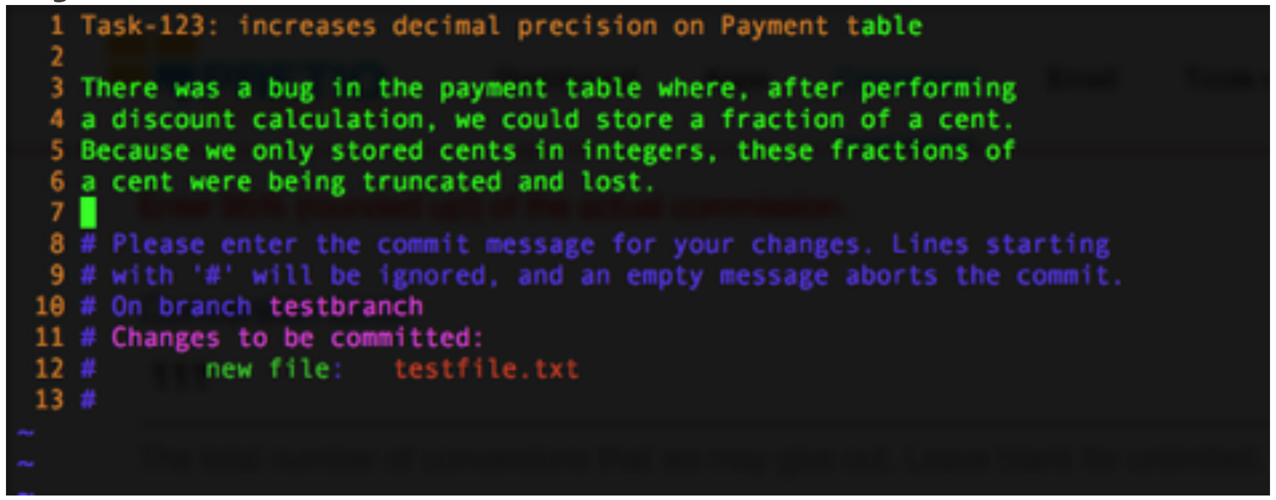
Good Commit Messages: How

- limit the subject to 50 characters (note word-wrap on GitHub)
- if needed, add a paragraph description (using *git commit* instead of *git commit -m*)
- commit should explain ‘what’ and ‘why’
- the code explains ‘how’
- use the imperative mood: “This commit will….”

- see in github how words wrap funny - that’s the character limit

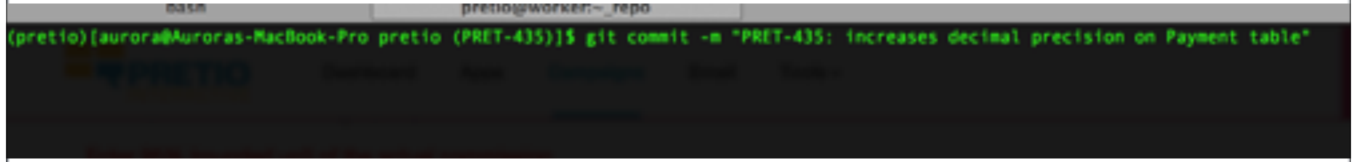
Good Commit Messages: How

```
> git commit
```



```
Task-123: increases decimal precision on Payment table

There was a bug in the payment table where, after performing
a discount calculation, we could store a fraction of a cent.
Because we only stored cents in integers, these fractions of
a cent were being truncated and lost.

# Please enter the commit message for your changes. Lines starting
# with '#' will be ignored, and an empty message aborts the commit.
# On branch testbranch
# Changes to be committed:
#       new file:   testfile.txt
#
~
~
~
```

```
> git commit -m "Insert Message Here"
```



```
(pretio)[aurora@Auroras-MacBook-Pro pretio (PRET-435)]$ git commit -m "PRET-435: increases decimal precision on Payment table"
```

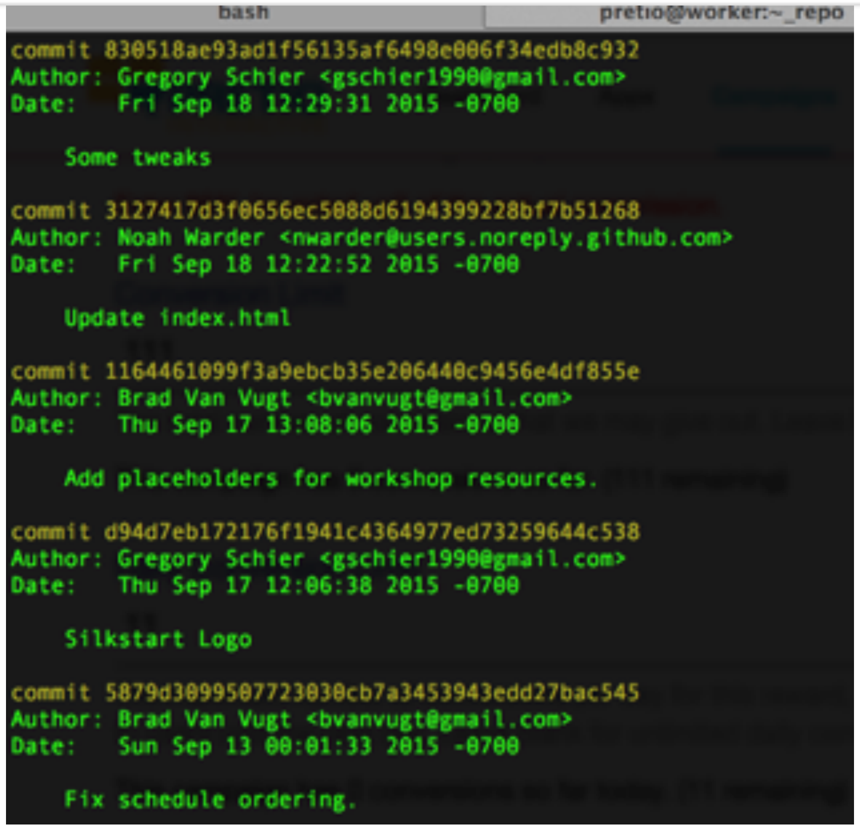
- first command opens the commit in your command line editor (Vim is pictured)
- second command is a shortcut for a quick message

Git logs and history: Why

- Lots of git tools that tell you what happened, when, and (if the person wrote good commit messages!) why
- Mission critical when you are working on a code base written by someone else
- Mission critical when you are working on a code base written by past you, and present you suspects past you was drunk

Git logs and history: How

```
> git log
```

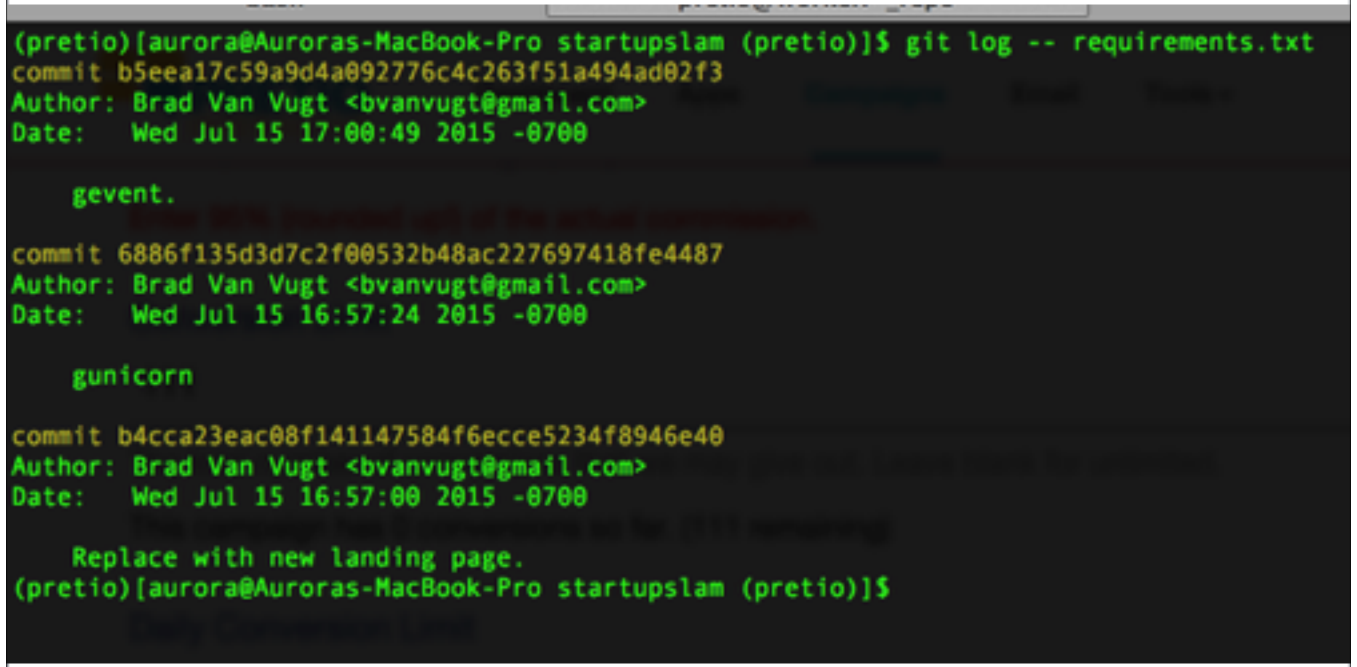


```
bash                                   pretio@worker:~_repo
commit 830518ae93ad1f56135af6498e006f34edb8c932
Author: Gregory Schier <gschier1990@gmail.com>
Date:   Fri Sep 18 12:29:31 2015 -0700

    Some tweaks

commit 3127417d3f0656ec5088d6194399228bf7b51268
Author: Noah Warder <nwarder@users.noreply.github.com>
Date:   Fri Sep 18 12:22:52 2015 -0700

    Update index.html

commit 1164461099f3a9ebcb35e206440c9456e4df855e
Author: Brad Van Vugt <bvanvugt@gmail.com>
Date:   Thu Sep 17 13:08:06 2015 -0700

    Add placeholders for workshop resources.

commit d94d7eb172176f1941c4364977ed73259644c538
Author: Gregory Schier <gschier1990@gmail.com>
Date:   Thu Sep 17 12:06:38 2015 -0700

    Silkstart Logo

commit 5879d3099507723030cb7a3453943edd27bac545
Author: Brad Van Vugt <bvanvugt@gmail.com>
Date:   Sun Sep 13 00:01:33 2015 -0700

    Fix schedule ordering.
```

- standard historical log in reverse chronological order
- this log is taken from the startupslam git repo. I'll leave judgement of the quality of the log to the reader.
- NOTE THE HASH OF THE COMMIT (used for other commands)

Git logs and history: How

```
> git log -- <filename>
```

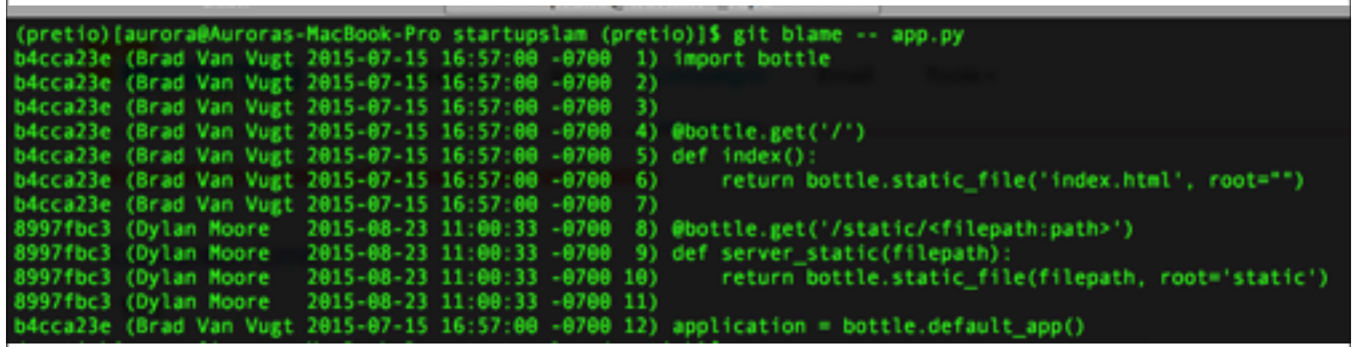


```
(pretio)[aurora@Auroras-MacBook-Pro startupslam (pretio)]$ git log -- requirements.txt
commit b5eea17c59a9d4a092776c4c263f51a494ad02f3
Author: Brad Van Vugt <bvanvugt@gmail.com>
Date:   Wed Jul 15 17:00:49 2015 -0700

    gevent.

commit 6886f135d3d7c2f00532b48ac227697418fe4487
Author: Brad Van Vugt <bvanvugt@gmail.com>
Date:   Wed Jul 15 16:57:24 2015 -0700

    gunicorn

commit b4cca23eac08f141147584f6ecce5234f8946e40
Author: Brad Van Vugt <bvanvugt@gmail.com>
Date:   Wed Jul 15 16:57:00 2015 -0700

    Replace with new landing page.
(pretio)[aurora@Auroras-MacBook-Pro startupslam (pretio)]$
```

- specify by filename for just the history on that file/folder (works ESPECIALLY great on deleted files, and trying to figure out when a file got deleted)
- Note equivalent PyCharm hack: right-click on file, git -> history

Git logs and history: How

```
> git blame -- <filename>
```

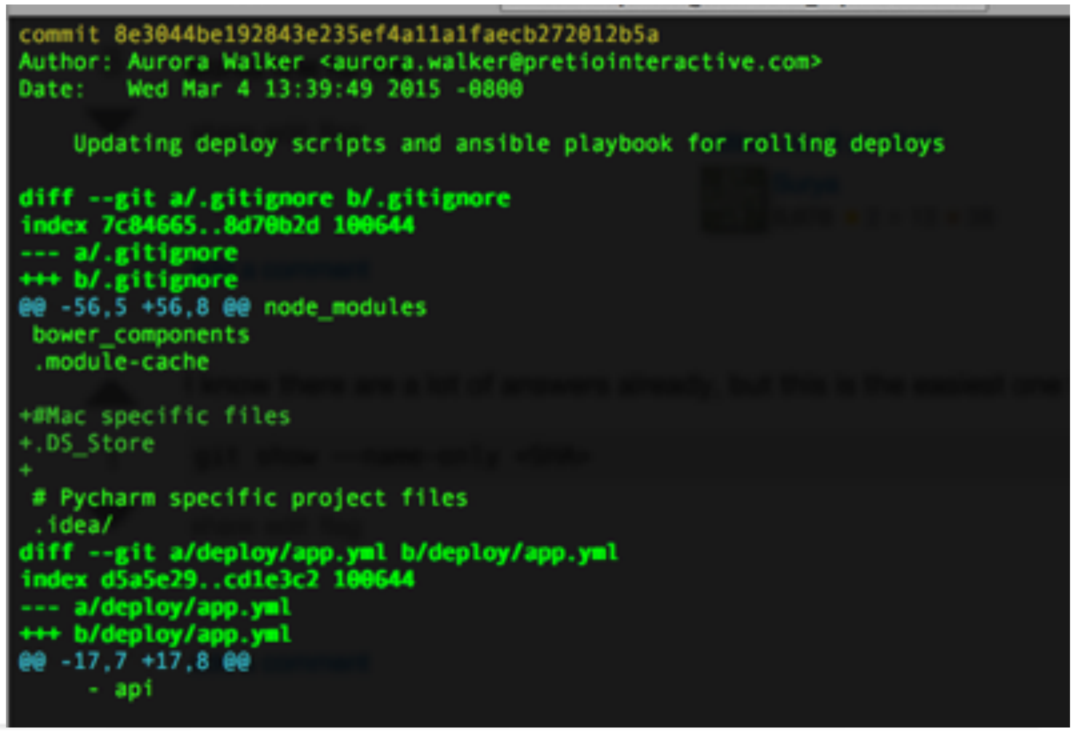


```
(pretio)[aurora@Auroras-MacBook-Pro startupslam (pretio)]$ git blame -- app.py
b4cca23e (Brad Van Vugt 2015-07-15 16:57:00 -0700  1) import bottle
b4cca23e (Brad Van Vugt 2015-07-15 16:57:00 -0700  2)
b4cca23e (Brad Van Vugt 2015-07-15 16:57:00 -0700  3)
b4cca23e (Brad Van Vugt 2015-07-15 16:57:00 -0700  4) @bottle.get('/')
b4cca23e (Brad Van Vugt 2015-07-15 16:57:00 -0700  5) def index():
b4cca23e (Brad Van Vugt 2015-07-15 16:57:00 -0700  6)     return bottle.static_file('index.html', root="")
b4cca23e (Brad Van Vugt 2015-07-15 16:57:00 -0700  7)
8997fbc3 (Dylan Moore   2015-08-23 11:00:33 -0700  8) @bottle.get('/static/<filepath:path>')
8997fbc3 (Dylan Moore   2015-08-23 11:00:33 -0700  9) def server_static(filepath):
8997fbc3 (Dylan Moore   2015-08-23 11:00:33 -0700 10)     return bottle.static_file(filepath, root='static')
8997fbc3 (Dylan Moore   2015-08-23 11:00:33 -0700 11)
b4cca23e (Brad Van Vugt 2015-07-15 16:57:00 -0700 12) application = bottle.default_app()
```

- Show who changed exactly what line in what commit (shortened hash, but usable most anywhere you can use a commit)

Git logs and history: How

```
> git show <commit>
```

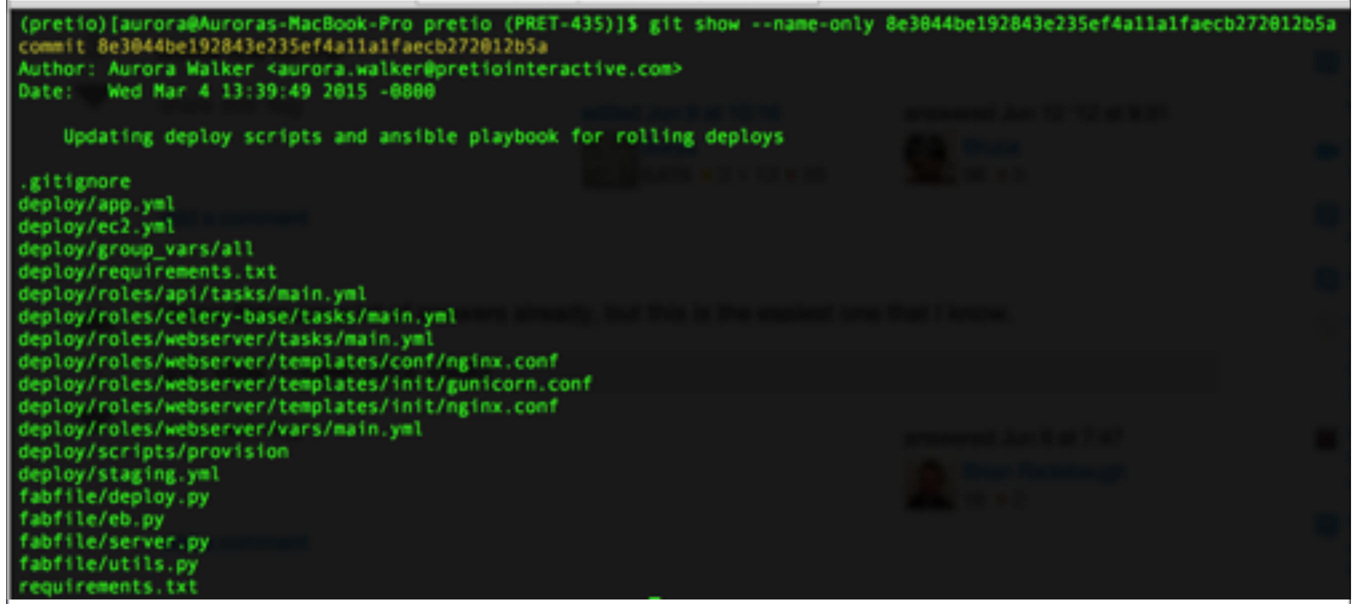


```
commit 8e3044be192843e235ef4a11a1faecb272012b5a
Author: Aurora Walker <aurora.walker@pretiointeractive.com>
Date:   Wed Mar 4 13:39:49 2015 -0800

    Updating deploy scripts and ansible playbook for rolling deploys

diff --git a/.gitignore b/.gitignore
index 7c84665..8d70b2d 100644
--- a/.gitignore
+++ b/.gitignore
@@ -56,5 +56,8 @@ node_modules
 bower_components
 .module-cache

+#Mac specific files
+.DS_Store
+
 # Pycharm specific project files
 .idea/
diff --git a/deploy/app.yml b/deploy/app.yml
index d5a5e29..cd1e3c2 100644
--- a/deploy/app.yml
+++ b/deploy/app.yml
@@ -17,7 +17,8 @@
     - api
```

- Full diff of a commit with all changes
- minus sign means a removal, plus sign means an addition
- practically speaking the file dif on GitHub is much more user friendly

Git logs and history: How

```
> git show --name-only <commit>
```



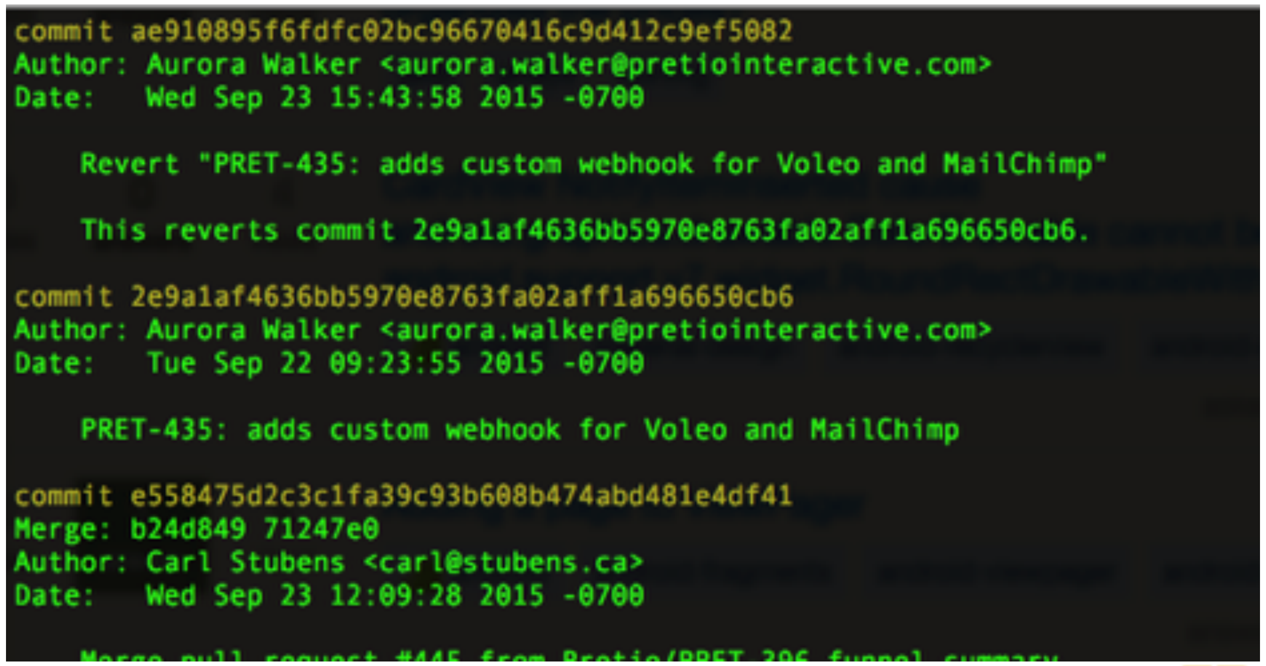
```
(pretio)[aurora@Auroras-MacBook-Pro pretio (PRET-435)]$ git show --name-only 8e3044be192843e235ef4a11a1faecb272012b5a
commit 8e3044be192843e235ef4a11a1faecb272012b5a
Author: Aurora Walker <aurora.walker@pretiointeractive.com>
Date:   Wed Mar 4 13:39:49 2015 -0800

    Updating deploy scripts and ansible playbook for rolling deploys

.gitignore
deploy/app.yml
deploy/ec2.yml
deploy/group_vars/all
deploy/requirements.txt
deploy/roles/api/tasks/main.yml
deploy/roles/celery-base/tasks/main.yml
deploy/roles/webserver/tasks/main.yml
deploy/roles/webserver/templates/conf/nginx.conf
deploy/roles/webserver/templates/init/gunicorn.conf
deploy/roles/webserver/templates/init/nginx.conf
deploy/roles/webserver/vars/main.yml
deploy/scripts/provision
deploy/staging.yml
fabfile/deploy.py
fabfile/eb.py
fabfile/server.py
fabfile/utils.py
requirements.txt
```

- Show all files changed in a given commit
- Disclaimer:8e3044be192843e235ef4a11a1faecb272012b5a I use PyCharm to tell me these things rather than use the command line

DEMO IN PYCHARM HOW TO DO THIS EASIER

Git logs and history: How

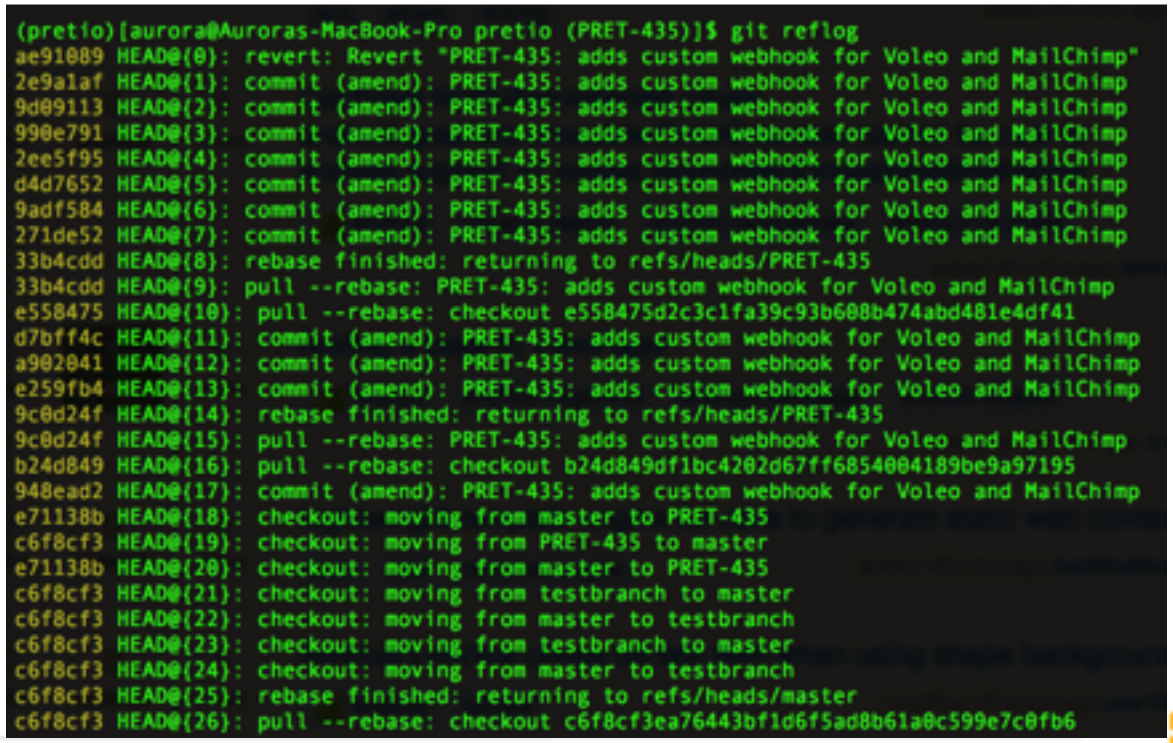
```
> git revert <commit>
//creates an 'opposite' commit that un-do's
```



```
commit ae910895f6fdfc02bc96670416c9d412c9ef5082
Author: Aurora Walker <aurora.walker@pretiointeractive.com>
Date:   Wed Sep 23 15:43:58 2015 -0700

    Revert "PRET-435: adds custom webhook for Voleo and MailChimp"

    This reverts commit 2e9a1af4636bb5970e8763fa02aff1a696650cb6.

commit 2e9a1af4636bb5970e8763fa02aff1a696650cb6
Author: Aurora Walker <aurora.walker@pretiointeractive.com>
Date:   Tue Sep 22 09:23:55 2015 -0700

    PRET-435: adds custom webhook for Voleo and MailChimp

commit e558475d2c3c1fa39c93b608b474abd481e4df41
Merge: b24d849 71247e0
Author: Carl Stubens <carl@stubens.ca>
Date:   Wed Sep 23 12:09:28 2015 -0700

    Merge pull request #445 from Pretio/PRET-396 funnel summary
```

Git logs and history: How

```
> git reflog
// different from log! 'Personal' history
```

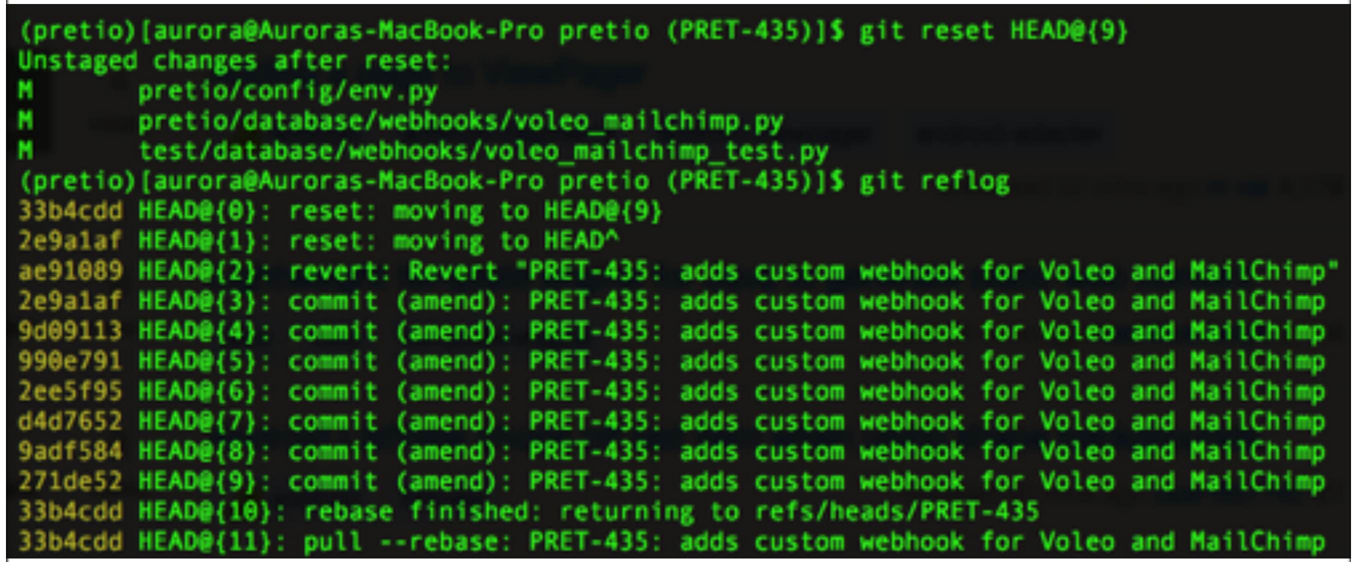


```
(pretio)[aurora@Auroras-MacBook-Pro pretio (PRET-435)]$ git reflog
ae91089 HEAD@{0}: revert: Revert "PRET-435: adds custom webhook for Voleo and MailChimp"
2e9a1af HEAD@{1}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
9d09113 HEAD@{2}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
990e791 HEAD@{3}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
2ee5f95 HEAD@{4}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
d4d7652 HEAD@{5}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
9adf584 HEAD@{6}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
271de52 HEAD@{7}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
33b4cdd HEAD@{8}: rebase finished: returning to refs/heads/PRET-435
33b4cdd HEAD@{9}: pull --rebase: PRET-435: adds custom webhook for Voleo and MailChimp
e558475 HEAD@{10}: pull --rebase: checkout e558475d2c3c1fa39c93b608b474abd481e4df41
d7bff4c HEAD@{11}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
a902041 HEAD@{12}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
e259fb4 HEAD@{13}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
9c0d24f HEAD@{14}: rebase finished: returning to refs/heads/PRET-435
9c0d24f HEAD@{15}: pull --rebase: PRET-435: adds custom webhook for Voleo and MailChimp
b24d849 HEAD@{16}: pull --rebase: checkout b24d849df1bc4202d67ff6854004189be9a97195
948ead2 HEAD@{17}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
e71138b HEAD@{18}: checkout: moving from master to PRET-435
c6f8cf3 HEAD@{19}: checkout: moving from PRET-435 to master
e71138b HEAD@{20}: checkout: moving from master to PRET-435
c6f8cf3 HEAD@{21}: checkout: moving from testbranch to master
c6f8cf3 HEAD@{22}: checkout: moving from master to testbranch
c6f8cf3 HEAD@{23}: checkout: moving from testbranch to master
c6f8cf3 HEAD@{24}: checkout: moving from master to testbranch
c6f8cf3 HEAD@{25}: rebase finished: returning to refs/heads/master
c6f8cf3 HEAD@{26}: pull --rebase: checkout c6f8cf3ea76443bf1d6f5ad8b61a0c599e7c0fb6
```

- more like a history of your actions (across all branches)
- allows you to move back and forth within your personal timeline

Git logs and history: How

```
> git reset HEAD@{#}
// go to a specific state in your reflog (local)
```

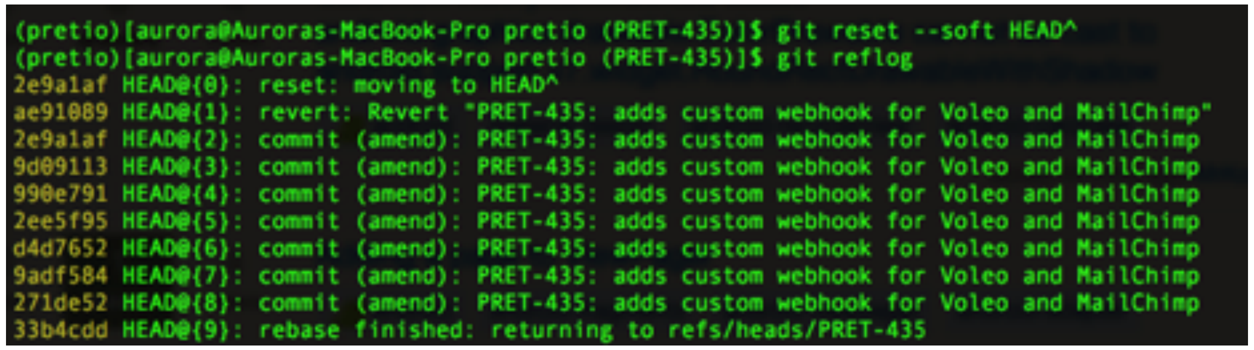


```
(pretio)[aurora@Auroras-MacBook-Pro pretio (PRET-435)]$ git reset HEAD@{9}
Unstaged changes after reset:
M       pretio/config/env.py
M       pretio/database/webhooks/voleo_mailchimp.py
M       test/database/webhooks/voleo_mailchimp_test.py
(pretio)[aurora@Auroras-MacBook-Pro pretio (PRET-435)]$ git reflog
33b4cdd HEAD@{0}: reset: moving to HEAD@{9}
2e9a1af HEAD@{1}: reset: moving to HEAD^
ae91089 HEAD@{2}: revert: Revert "PRET-435: adds custom webhook for Voleo and MailChimp"
2e9a1af HEAD@{3}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
9d09113 HEAD@{4}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
990e791 HEAD@{5}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
2ee5f95 HEAD@{6}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
d4d7652 HEAD@{7}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
9adf584 HEAD@{8}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
271de52 HEAD@{9}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
33b4cdd HEAD@{10}: rebase finished: returning to refs/heads/PRET-435
33b4cdd HEAD@{11}: pull --rebase: PRET-435: adds custom webhook for Voleo and MailChimp
```

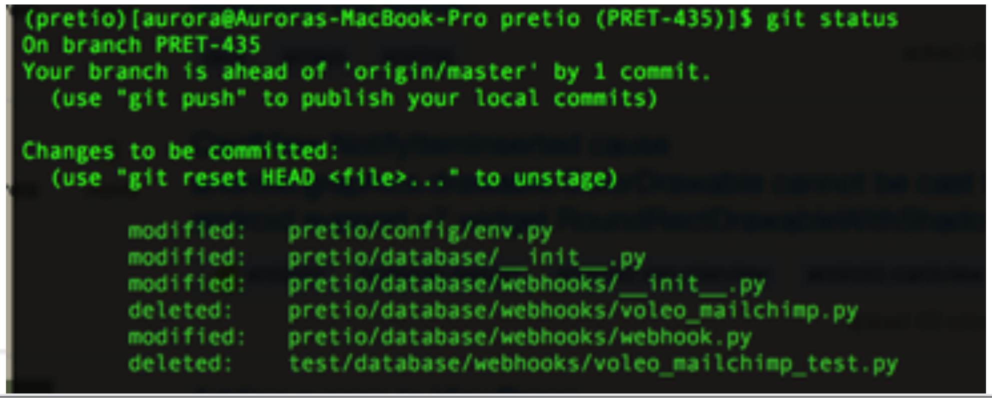
- Go to a specific point in time, but preserves time
- Note that it bumps everything up in the list!
- This is the master tool of fixing shit

Git logs and history: How

```
> git reset --soft HEAD^
// --soft leaves changes in 'status'
```



```
(pretio)[aurora@Auroras-MacBook-Pro pretio (PRET-435)]$ git reset --soft HEAD^
(pretio)[aurora@Auroras-MacBook-Pro pretio (PRET-435)]$ git reflog
2e9a1af HEAD@{0}: reset: moving to HEAD^
ae91089 HEAD@{1}: revert: Revert "PRET-435: adds custom webhook for Voleo and MailChimp"
2e9a1af HEAD@{2}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
9d09113 HEAD@{3}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
990e791 HEAD@{4}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
2ee5f95 HEAD@{5}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
d4d7652 HEAD@{6}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
9adf584 HEAD@{7}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
271de52 HEAD@{8}: commit (amend): PRET-435: adds custom webhook for Voleo and MailChimp
33b4cdd HEAD@{9}: rebase finished: returning to refs/heads/PRET-435
```



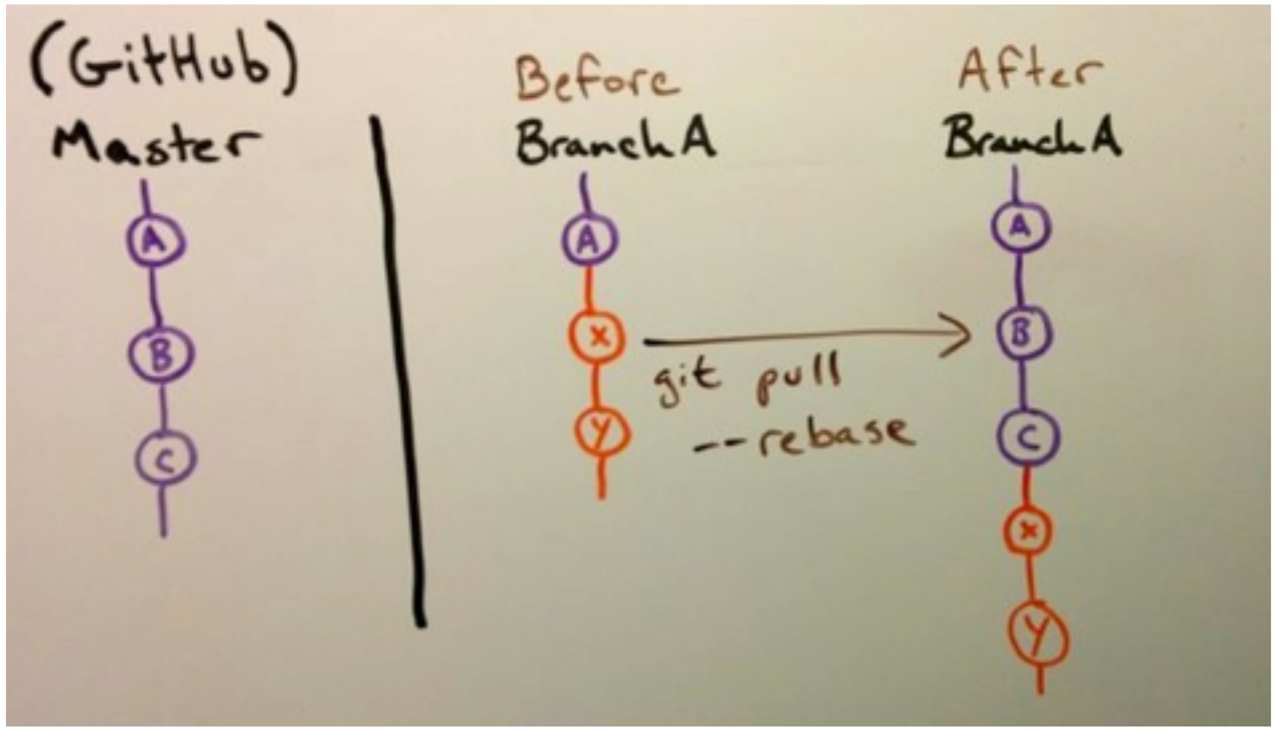
```
(pretio)[aurora@Auroras-MacBook-Pro pretio (PRET-435)]$ git status
On branch PRET-435
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)

Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

        modified:   pretio/config/env.py
        modified:   pretio/database/__init__.py
        modified:   pretio/database/webhooks/__init__.py
        deleted:    pretio/database/webhooks/voleo_mailchimp.py
        modified:   pretio/database/webhooks/webhook.py
        deleted:    test/database/webhooks/voleo_mailchimp_test.py
```

- common shortcut to undo the last HEAD{0} (Often known as 'undo last commit')
- the - - soft "leaves all your changed files" as seen in 'git status'
- using —hard resets the index and working tree, any changes to tracked files are discarded.

git rebase vs git merge

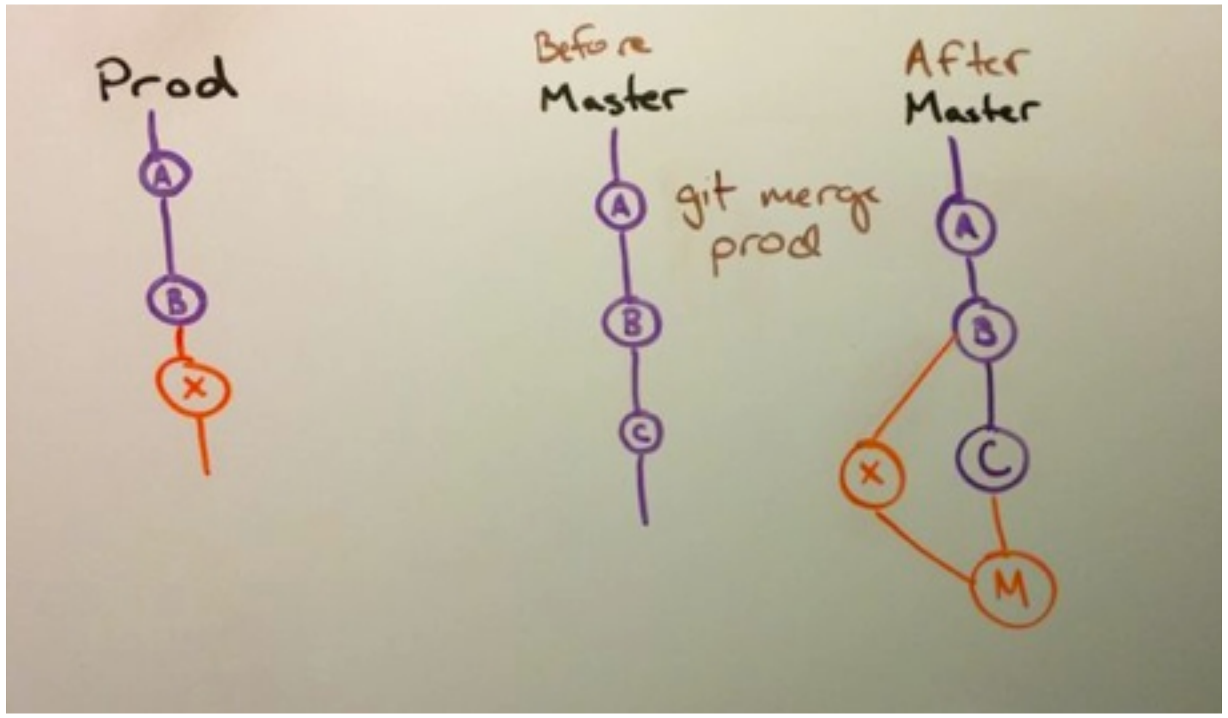
- Sometimes folks are… passionate about which is “better”
- Just two different tools for two different jobs

git rebase



- BranchA is tracking origin/master
- great for pulling down changes from your origin/upstream
- puts your current work on top of any changes that have been made since you ran checkout

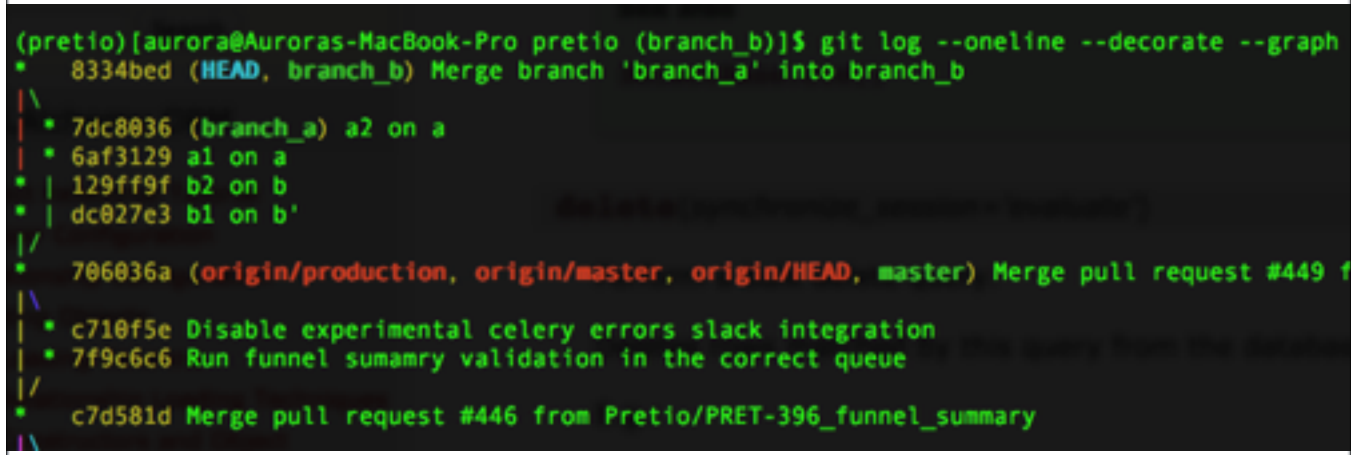
git merge



- 'M' is a new commit indicating the 'merge'
- this method keeps track of the time of 'checkout'
- Note: both merge and rebase need to handle code conflicts!

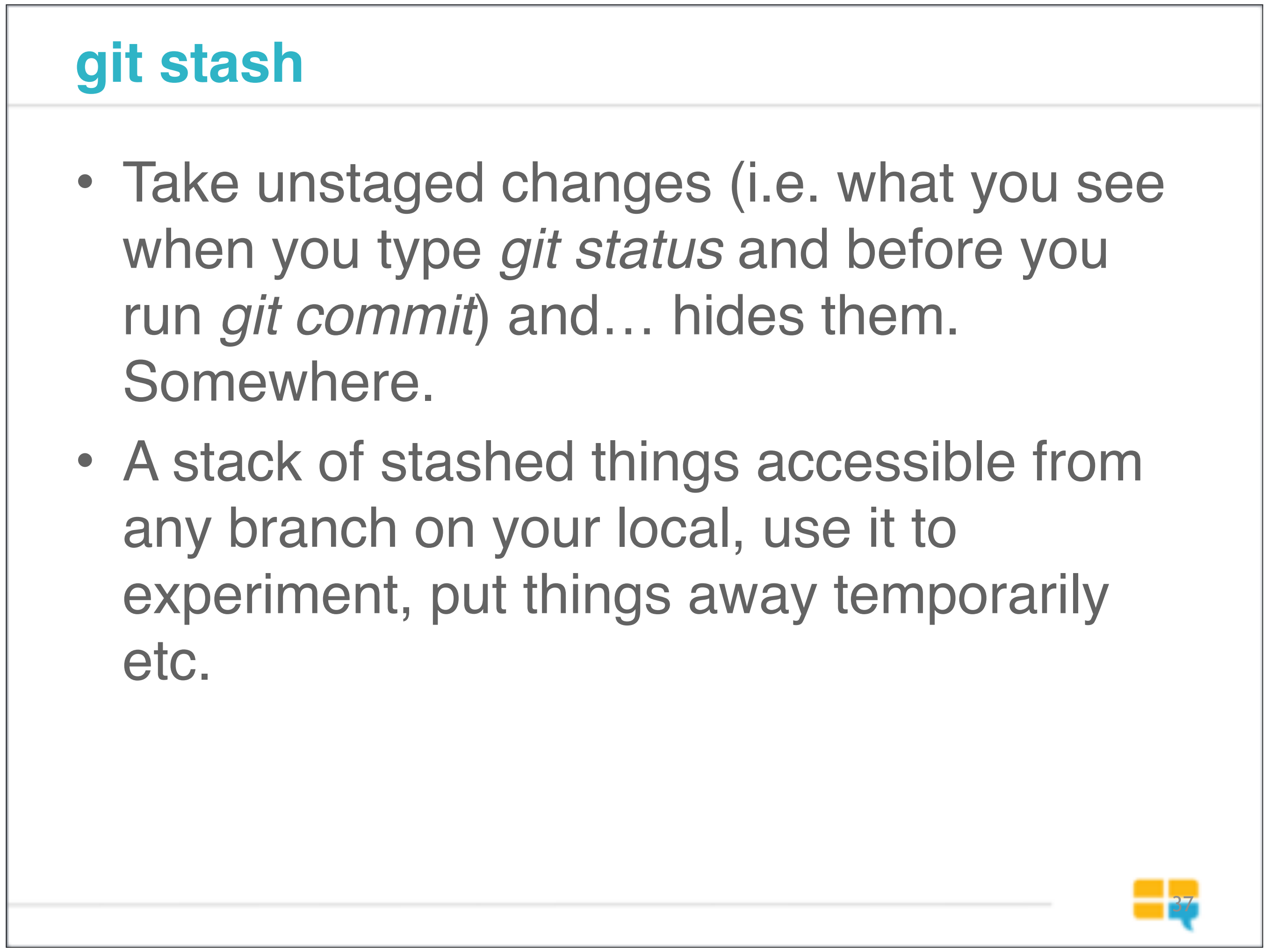
Bonus Log Command to Visualize Merges

```
> git log --oneline --decorate --graph
```



```
(pretio)[aurora@Auroras-MacBook-Pro pretio (branch_b)]$ git log --oneline --decorate --graph
*   8334bed (HEAD, branch_b) Merge branch 'branch_a' into branch_b
|\
| * 7dc8036 (branch_a) a2 on a
| * 6af3129 a1 on a
* | 129ff9f b2 on b
* | dc027e3 b1 on b'
|/
*   706036a (origin/production, origin/master, origin/HEAD, master) Merge pull request #449 f
|\
| * c710f5e Disable experimental celery errors slack integration
| * 7f9c6c6 Run funnel sumamry validation in the correct queue
|/
*   c7d581d Merge pull request #446 from Pretio/PRET-396_funnel_summary
|\
```

- this git log command helps illustrate the branching in the drawings
- note this is on a branch_b that merged in changes from a branch_a

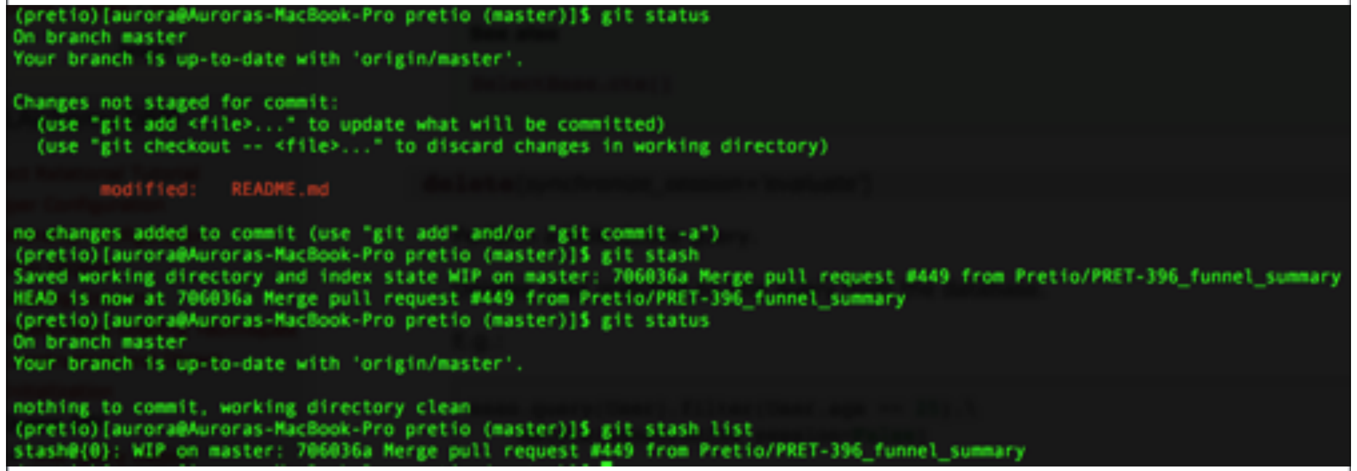


git stash

- Take unstaged changes (i.e. what you see when you type *git status* and before you run *git commit*) and… hides them. Somewhere.
- A stack of stashed things accessible from any branch on your local, use it to experiment, put things away temporarily etc.

git stash

```
> git stash      //stash unstaged changes
> git stash list //show everything stashed
> git stash pop  //un-stash the top item
```

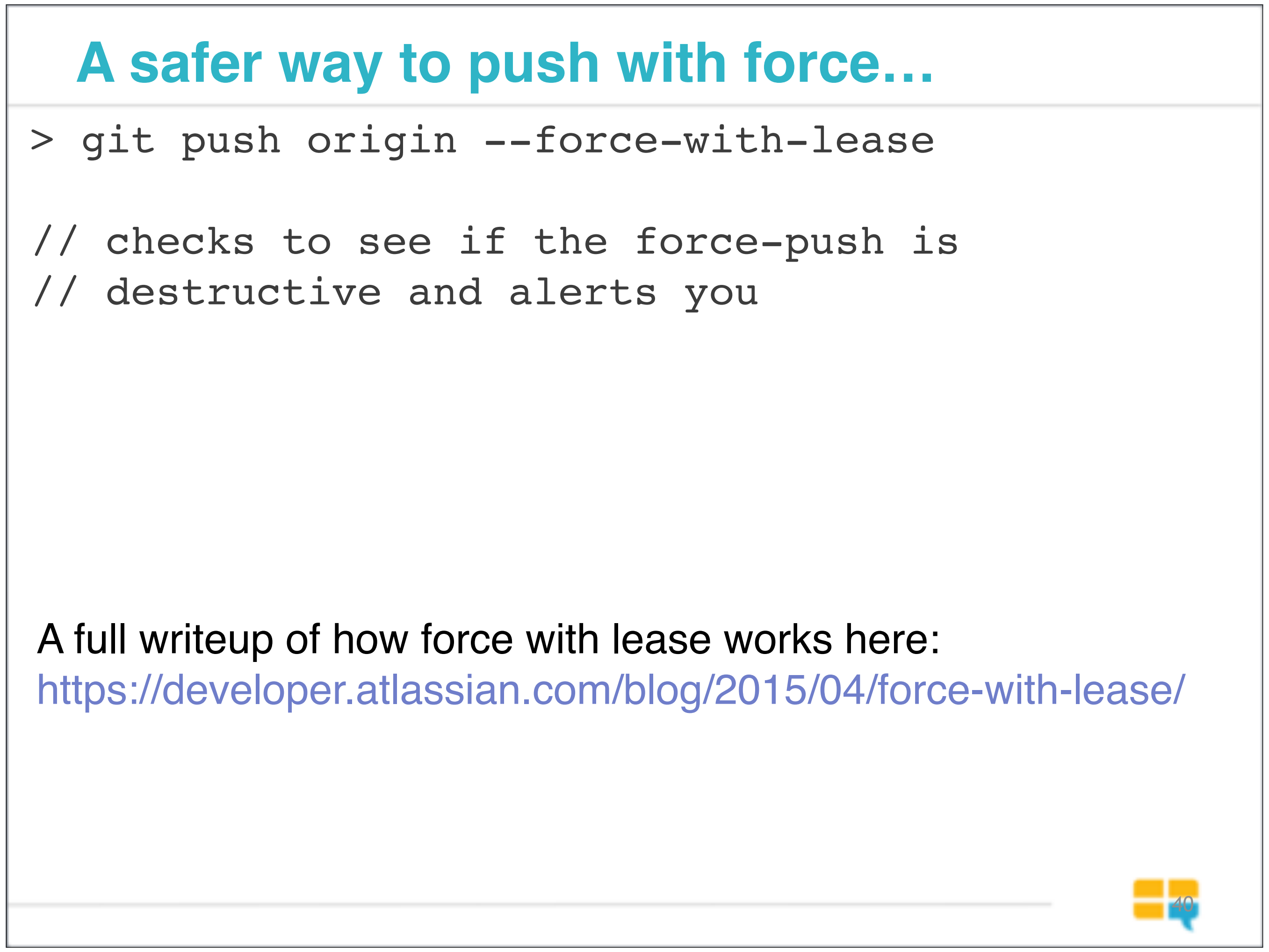


```
(pretio)[aurora@Auroras-MacBook-Pro pretio (master)]$ git status
On branch master
Your branch is up-to-date with 'origin/master'.

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

        modified:   README.md

no changes added to commit (use "git add" and/or "git commit -a")
(pretio)[aurora@Auroras-MacBook-Pro pretio (master)]$ git stash
Saved working directory and index state WIP on master: 706036a Merge pull request #449 from Pretio/PRET-396_funnel_summary
HEAD is now at 706036a Merge pull request #449 from Pretio/PRET-396_funnel_summary
(pretio)[aurora@Auroras-MacBook-Pro pretio (master)]$ git status
On branch master
Your branch is up-to-date with 'origin/master'.

nothing to commit, working directory clean
(pretio)[aurora@Auroras-MacBook-Pro pretio (master)]$ git stash list
stash@{0}: WIP on master: 706036a Merge pull request #449 from Pretio/PRET-396_funnel_summary
```

A safer way to push with force…

```
> git push origin --force
// force pushing is destructive and kills
// work that doesn't match your local history
```

- sometimes there are legit reasons to git push —force, but it is a really destructive action that can overwrite history and loose work, and it's dangerous and easy to make a mistake



A safer way to push with force…

```
> git push origin --force-with-lease

// checks to see if the force-push is
// destructive and alerts you
```

A full writeup of how force with lease works here:
https://developer.atlassian.com/blog/2015/04/force-with-lease/

—force with lease is a lot safer (but not 100% fool proof!) and should be your default instead

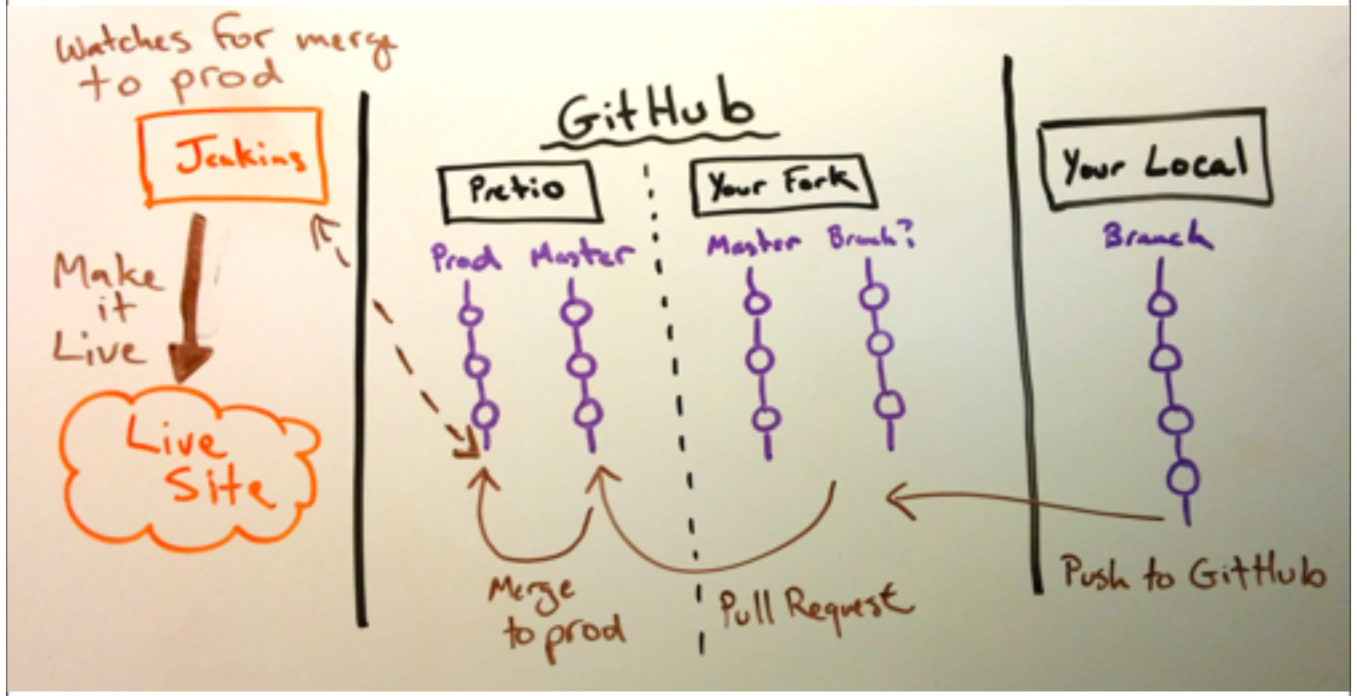
Got that? Good. Now it's time for the interactive part…

LETS ALL COMMIT CODE AND SEE WHAT HAPPENS!

Interactive Project

- We set up a GitHub repo:
  - https://github.com/Pretio/startup_slam_2015_website
- We have a fake ‘JIRA Task Board’ with simple tasks to complete.
- You guys get to team up, code up the task, do some code review, and get your code merged.
- Write code solo, in teams, do code review etc. Work together!
- The GitHub repo is also hooked up to Jenkins so it will deploy code LIVE.
- We’re not 100% sure what will happen. It’ll probably be great.
- Treat the Pretio Team as ‘Project Managers’. Feel free to ask for clarification, help etc.

Visual Aid


Watches for merge to prod
Jenkins
Make it Live
Live Site
GitHub
Pretio
Prod
Master
Your Fork
Master
Branch?
Your Local
Branch
Merge to prod
Pull Request
Push to GitHub

Sources/Reference/Reading

Thanks To:
http://chris.beams.io/posts/git-commit/
// A nice write up on writing good commit messages
http://nvie.com/posts/a-successful-git-branching-model/
//The classic document referencing the Git Branching model
https://github.com/blog/2019-how-to-undo-almost-anything-with-git
// Notes on handling ‘oh no what have I done’ situations
https://developer.atlassian.com/blog/2015/04/force-with-lease/
//Write up on how force-with-lease works

Tools:
https://www.jetbrains.com/idea/
//Nice development IDE’s for a variety of languages with great git integration

Further Reading:
https://scotch.io/bar-talk/git-cheat-sheet
// Fantastic Git Cheat sheet for reference
https://codewords.recurse.com/issues/two/git-from-the-inside-out
// Knowing how Git works will level up your Git Wizardy
http://git-scm.com/docs
//The actual documentation on Git commands
http://git-scm.com/book/en/v2
//The official Pro Git book for free
https://en.wikipedia.org/wiki/Comparison_of_continuous_integration_software
// Jenkins-like tools and alternatives